RadioShack®
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MD-1700 76 Key MIDI Keyboard

Owner's Manual
Please read before using this equipment.

❒ Contents

❒ *Features*

Your RadioShack MD-1700 76 Key MIDI Keyboard is a state-of-the-art musical instrument that offers you a vast array of sounds. You can choose from 232 different musical instruments or sound effects and 130 rhythms, as well as automatic accompaniments and percussion sounds.

Your keyboard also includes a MIDI (Musical Instrument Digital Interface) feature, which lets you connect it to other MIDI-equipped musical instruments or devices — even your personal computer.

This versatile keyboard can provide hours of fun and is ideal for anyone who wants to make music, from the beginner to the experienced musician.

Note: The keyboard conforms to most, but not all, General MIDI specifications. Because of this, you might experience some incompatibility when using the keyboard with another General MIDI device. For more information, see “Using MIDI” on Page 39.

Your keyboard’s features include:

76 Full-Sized Keys — provide the feel of a fine musical instrument.

Touch Response — the keyboard’s volume varies in response to the force of your touch, just like an acoustic piano or organ, so you can add emotion to your music.

32-Note Polyphonic Sound — lets you play and hear up to 32 notes at the same time, so you can play or create almost any type of music.

232 Tones — you can set your keyboard to sound like anything from a harpsichord to a honky-tonk piano. You can even create your own tones with the custom tone synthesizer feature.

130 Auto-Rhythms — provide a steady beat for many styles of music, from rhumba to rock.

Large LCD Music Information Display — shows you the notes and chords as you play them, along with the current tone, rhythm, and tempo. The display’s built-in backlight makes it easy to read it, even in dim light.

Pitch Bender Wheel — lets you bend notes by altering their pitch, creating realistic effects for tones such as reed instruments or guitar.

Modulation Wheel — lets you add vibrato to notes, creating realistic effects for tones such as saxophones.

Two Built-In Stereo Bass-Reflex Speakers — let you feel the bass your keyboard can produce and hear the sound you create.

120 Free Sessions — let you choose a wide number of accompaniments (consisting of a

prerecorded chord progression with a matching rhythm).

Synthesizer Function — lets you create up to 32 of your own original tones.

Registration Memory — lets you store up to 20 different setups of the keyboard's controls, letting you instantly recall them when you need them.

Headphones/Output Jack — lets you connect headphones so you can play without disturbing others, or an external amplifier so you can play for a crowd (neither supplied).

Assignable Jack — lets you connect a sustain pedal (not supplied) to the keyboard so you can sustain or soften your keyboard's sound, or start/stop an auto-rhythm.

Tune Control — lets you adjust the pitch of your keyboard so you can play in tune with other instruments.

Transpose Function — lets you instantly change the key of the music, even while you are playing.

Tempo Control — lets you speed up or slow down the tempo of any selected music pattern.

Auto Accompaniment — lets you automatically play a preset harmonic pattern to match the selected auto-rhythm.

Layer Function — lets you set the keyboard to play two different tones at the same time, giving your music a "layered" effect.

Mixer Function — lets you control any element of the auto accompaniment, memory playback, or MIDI data received from another MIDI device.

Auto Harmonize — automatically adds harmony to a melody you play.

One-Touch Preset — lets you quickly recall the tone, tempo, and other characteristics that are best suited for a rhythm you select.

DSP (Digital Signal Processing) Effects — let you add a variety of nuances to your music.

Automatic Intro/Ending Rhythm — you can set the keyboard so it automatically adds a 3- to 8-measure introduction or 3- to 8-measure ending to the selected auto-rhythm.

MIDI In/Out Jacks — let you connect the keyboard to another MIDI-equipped device.

Two Power Options — let you power the keyboard from internal batteries (not supplied) or standard AC power (with an optional adapter), so you can make music almost anywhere.

Note: This Owner's Manual explains how to use this electronic keyboard. It does not teach music.

THE FCC WANTS YOU TO KNOW

This equipment complies with the limits for a Class B digital device as specified in Part 15 of *FCC Rules*. These limits provide reasonable protection against radio and TV interference in a residential area. However, your equipment might cause TV or radio interference even when it is operating properly. To eliminate interference, you can try one or more of the following corrective measures:

- reorient or relocate the receiving antenna
- increase the distance between the equipment and the radio or TV
- use outlets on different electrical circuits for the keyboard and the radio or TV.

Consult your local RadioShack store if the problem still exists.

You must use shielded interface cables with this equipment.

❒ *Preparation*

Note: To connect a MIDI device to your keyboard, see “Making the MIDI Connections” on Page 39. To connect a sustain pedal, see “Using a Sustain Pedal” on Page 27.

CONNECTING POWER

You can power your keyboard using internal batteries or with standard AC power using an optional AC adapter.

Notes:

- Connecting an AC adapter automatically disconnects any internal batteries.
- Always disconnect the AC adapter when you finish using the keyboard.

Using Batteries

Your keyboard can use six D batteries (not supplied) for main keyboard power. For the best performance and longest life, we recommend RadioShack alkaline batteries.

Cautions:

- Use only fresh batteries of the required size and recommended type.
- Do not mix old and new batteries, different types of batteries (standard, alkaline, or rechargeable), or rechargeable batteries of different capacities.

1. While pressing the tabs on the battery compartment cover on the bottom of the keyboard, pull up the cover to remove it.
2. Place the batteries in the compartment as indicated by the polarity symbols (+ and –) marked beside the compartment.
3. Replace the cover.

When the keyboard stops operating properly, replace the batteries.

Warning: Dispose of old batteries promptly and properly. Do not burn or bury them.

Caution: If you do not plan to use the keyboard with batteries for a week or more, remove the batteries. Batteries can leak chemicals that can destroy electronic parts.

Cancelling Auto Power Off

When you use batteries to power the keyboard, it automatically shuts off after about 6 minutes if you do not press any key. Press **POWER** again to turn the keyboard back on.

To have the keyboard not automatically turn off during a session, turn the keyboard on while holding down **TONE**.

The keyboard resets auto power off every time you turn it off, then back on.

Using AC Power

You can power the keyboard using a 12V, 1500-mA AC adapter and a size M Adapta-plug™ adapter (neither supplied). Both are available at your local RadioShack store.

Cautions:

You must use a Class 2 power source that supplies 12V DC and delivers at least 1500 mA.

Its center tip must be set to negative and its plug must fit the keyboard's **DC 12V** jack. Using an adapter that does not meet these specifications could damage the keyboard or the adapter.

- Always connect the AC adapter to the keyboard before you connect it to AC power. When you finish, disconnect the adapter from AC power before you disconnect it from the keyboard.

1. Insert the Adaptaplug adapter into the adapter's cord so it reads **– TIP**.
2. Connect the AC adapter's barrel plug to the **DC 12V** jack on the back of the keyboard.
3. Plug the AC adapter's other end into a standard AC outlet.

REPLACING THE MEMORY BATTERY

Your keyboard uses one lithium battery to protect some types of data when it is turned off. This battery is installed at the factory, and lasts up to 5 years. If the keyboard's memory is erased when you turn the keyboard off, take the keyboard to your local RadioShack store to replace the lithium battery.

RESETTING THE KEYBOARD

Note: Resetting the keyboard clears all information you stored in the keyboard's memory, including the parameter settings, song sequencer, pattern sequencer, and registration memory. Resetting the keyboard's parameter settings clears only those settings from the keyboard's memory.

To reset the keyboard, turn the power off. Then hold down **ENTER** and press **POWER**. **Reset?** appears. Press **YES**.

To reset the keyboard's parameter settings, turn on the keyboard, then hold down **+**, **–**, and **ENTER** at the same time.

CONNECTING HEADPHONES

To listen to your keyboard without disturbing others, you can connect an optional pair of stereo headphones with a 1/4-inch (6.35-mm) plug. Your local RadioShack store sells a wide selection of headphones. Insert the headphones' plug into the **PHONES/OUTPUT** jack on the left side of the keyboard.

Note: Connecting headphones disconnects the keyboard's built-in speakers.

Listening Safely

To protect your hearing, follow these guidelines when you use headphones.

- Set the volume to the lowest setting before you begin listening. After you begin listening, adjust the volume to a comfortable level.
- Do not listen at extremely high volume levels. Extended high-volume listening can lead to permanent hearing loss.
- Once you set the volume, do not increase it. Over time, your ears adapt to the volume level, so a volume level that does not cause discomfort might still damage your hearing.

CONNECTING AN EXTERNAL AMPLIFIER

To amplify your keyboard's sound, you can connect it to an optional external amplifier using an audio cable with a 1/4-inch (6.35-mm) plug (not supplied). To connect an external amplifier to your keyboard, insert the cable's plug into the **PHONES/OUTPUT** jack on the left side of the keyboard, and connect

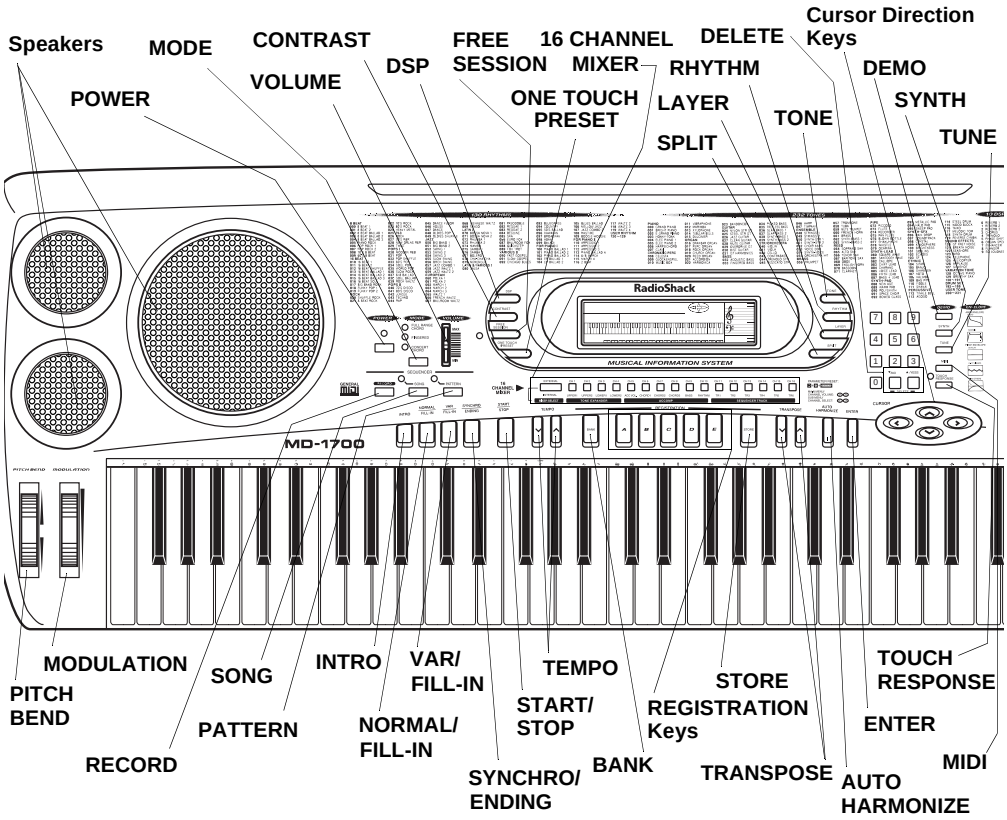
the cable's other end to the amplifier's input jack(s) (such as AUX IN or TAPE IN).

Your local RadioShack store sells a full line of amplifiers, speakers, and cables.

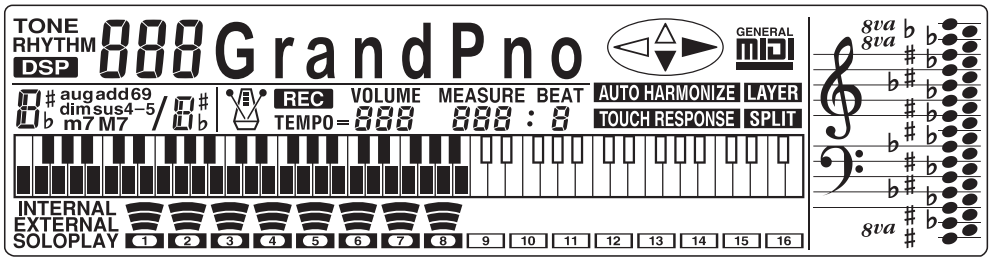
USING THE SHEET MUSIC STAND

To easily view sheet music while playing your keyboard, insert the supplied sheet music stand into the slot on the top back panel.

❒ *A Quick Look at Your Keyboard*



A LOOK AT THE DISPLAY



The display's top line shows the number and name of the tone or rhythm you select, or the names and settings of various parameters. The directional arrows (cursor key symbols) at the right show which cursor keys are active. Press the desired key to advance through various settings.

The middle row shows the tempo in beats per minute, the number of the measure playing, and the beat count in each measure. The treble and bass clefs on the right of the display show the notes as they play. The keyboard shows the location of the keys being pressed.

The bar graph at the bottom of the display shows the sound level on each of the 16 channels (see "Using the Mixer" on Page 20).

Adjusting the Display Contrast

You can adjust the display contrast to any of 100 levels. To adjust the display contrast, press **CONTRAST**, then repeatedly press **+** or **–** or enter a number from 00 to 99 while **CONTRAST** appears.

To reset the display contrast to its default setting (50), hold down **+** and **–** at the same time.

❒ *Operation*

BASIC OPERATION

1. Slide **VOLUME** to **MIN** (minimum).

   Important: To prevent hearing damage, always set the keyboard's volume to **MIN** before you turn it on.

2. To turn on the keyboard, press **POWER**. The POWER indicator lights and the display turns on.

   Note: To save power when using batteries, the keyboard automatically turns off if it has not been used for about 6 minutes. To turn on the keyboard again, press **POWER**. To cancel auto power off, see "Cancelling Auto Power Off" on Page 6.

3. If necessary, repeatedly press **MODE** until all indicators on the front of the keyboard turn off.

4. Slide **VOLUME** toward **MAX** slightly and begin playing the keyboard.

Notes:

- The keyboard automatically selects the tone GRAND PIANO (No. 000) when you turn the power on. Each time you turn it on after that, it selects the last selected tone. To select a different tone, see “Using the Preset Tones” on Page 10.

- To select an auto-rhythm, see “Using the Preset Auto-Rhythms” on Page 15.

- To play auto accompaniment, see “Using Auto Accompaniment” on Page 16.

5. Slide **VOLUME** toward **MAX** to increase the sound level or toward **MIN** to decrease it.

6. To turn off the keyboard, press **POWER**. The Power indicator and the keyboard’s display turn off.

PLAYING THE DEMONSTRATION TUNES

To showcase its sounds, your keyboard can play two preprogrammed demonstration tunes. To start the demonstration, press **DEMO**. The keyboard plays the first demonstration tune (No. 0). To select the other tune, press **–** or **+** on the keypad. The selected tune’s number appears and the tune plays. To stop the demo tune, press **DEMO** or **START/STOP**.

USING THE PRESET TONES

Your keyboard can sound like 232 different musical instruments or sound effects. The name and three-digit number for each preset tone is listed on the 232 TONES list on the keyboard’s top panel.

Notes:

- The keyboard has 32-note (maximum) polyphonic sound. This means that you can play up to 32 different notes at the same time with most of the keyboard’s preset tones. Some of the keyboard’s preset tones, however, are capable of only 16-note polyphony.

- Most tones on this keyboard have been recorded and processed using a technique called digital sampling. To ensure a high level of tonal quality, samples are taken in the low, mid, and high ranges and are then combined to sound amazingly close to the originals. You might notice very slight differences in volume or sound quality for some tones when you play them at different positions on the keyboard. This is an unavoidable result of multiple sampling and is not a malfunction.

To select and play a preset tone:

1. Press **TONE**. **TONE** and the current tone’s name and number appear.

   Note: The first time you turn the keyboard on, it automatically selects the tone GRAND PIANO (No. 000).

2. To play a different tone, choose a preset tone from the 232 TONES list and enter its three-digit number on the keypad. As you press the keys, the selected digits appear.

   Notes:

- You can select the next highest or lowest numbered tone by simply pressing **+** or **–** on the keypad.

- The names of tone numbers 000–129 are marked above and to the right of the keyboard’s display. The names for tone numbers 130–199 appear in the following table. Memory locations 200–231

are reserved for custom tones that you create (see “Using the Custom Tone Synthesizer” on Page 22).

No.	Tone	No.	Tone
130	STEREO PIANO	165	PERC ENS
131	ELEC PIANO 3	166	VIBES ENS
132	DETUNED EP 1	167	REVERSE ORCH
133	DETUNED EP 2	168	TOUCH STR PNO
134	DETUNED EP 3	169	TOUCH STRINGS
135	DETUNED CLAVI	170	TOUCH VIB PNO
136	ELEC ORGAN 1	171	TOUCH BASS
137	ELEC ORGAN 2	172	BRASS FALL
138	ELEC ORGAN 3	173	BASS SLIDE
139	ELEC ORGAN 4	174	FEEDBACK
140	ELEC ORGAN 5	175	PIANO→STR
141	PIPE ORGAN	176	SYNTH-PAD 1
142	STEREO GUITAR	177	SYNTH-PAD 2
143	12 STR GUITAR	178	SYNTH-PAD 3
144	SLAP BASS	179	SYNTH-PAD 4
145	SYNTH-BASS 3	180	SYNTH-PAD 5
146	SYNTH-BASS 4	181	SYNTH-PAD 6
147	SYNTH-BASS 5	182	SYNTH-PAD 7
148	STRINGS 3	183	SYNTH-PAD 8
149	TRUMPET 2	184	SYNTH-LEAD 1
150	BRASS SECTION	185	SYNTH-LEAD 2
151	SYNTH-BRASS 3	186	SYNTH-SFX 1
152	STRINGS PIANO	187	SYNTH-SFX 2
153	STRINGS EP	188	SYNTH-SFX 3
154	STR HARPSI	189	SYNTH-SFX 4
155	STR CELESTA	190	SEQUENCE 1
156	STR KALIMBA	191	SEQUENCE 2
157	STRINGS HORN	192	DRUM SET 1 STANDARD SET
158	STEREO STR GTR	193	DRUM SET 2 ROOM SET
159	SITAR AAH	194	DRUM SET 3 POWER SET
160	HARP ENS	195	DRUM SET 4 ELEC-TRONIC SET
161	VOICE ENS	196	DRUM SET 5 SYNTH SET
162	BRASS ENS	197	DRUM SET 6 JAZZ SET
163	OCTAVE SAX	198	DRUM SET 7 BRUSH SET
164	PIPE ENS	199	DRUM SET 8 ORCHESTRA SET

- Always enter three digits for the tone number. For example, to select ELEC PIANO 1 (No. 004), press **0 0 4**.
- If you enter an incorrect first digit, press **TONE** to clear your entry, then enter the correct digit.
- When you select one of the drum sets (tone numbers 192–199), each key

plays a different percussion sound. See “Drum Assignment List” on Page 48.

- When you select tone numbers 168–170 and set **TOUCH RESPONSE** to **ON**, the sound you hear changes based on how hard you strike the key(s). See “Using Touch Response” on Page 26 for more information.
- The drum set sounds change when you change the rhythm number, play back data stored in memory, or receive MIDI program change data.
- Tone numbers 200–231 are preset to duplicate tones 128–159. You can change them to the desired setting(s). See “Using the Custom Tone Synthesizer” on Page 22.

3. Play the keyboard to hear the selected tone and adjust **VOLUME** to the desired level.
4. To select a different tone, repeat Step 2 while **TONE** appears.

USING DSP EFFECTS

Your keyboard’s DSP (Digital Signal Processing) feature lets you add a variety of nuances to your music. The following table shows the available effects.

No.	Display Shows	Tone
0	**Reverb1**	Deep reverb
1	**Reverb2**	Medium reverb
2	**Reverb3**	Shallow reverb
3	**Chorus**	More depth and breadth
4	**Tremolo**	Slight modulation of volume
5	**Phaser**	Rotary speaker effect
6	**Organ Speaker**	Electronic organ rotary speaker effect
7	**Enhancer**	Attack effect by enhancing high harmonics
8	**Flanger**	Jet plane effect that causes the sound to build then decay
9	**Loudness**	Enhances the lower tones

Follow these steps to select and turn DSP effects on or off.

1. Press **DSP**. **DSP** and the name of the currently selected effect appear when any effect is turned on, or **DSP Off** appears if no effect has been selected.
2. To turn off the effect, while **DSP** appears, repeatedly press **+** or **–** until the desired effect appears, or until **DSP Off** appears.

Once selected, you can turn the effect on and off by pressing **DSP**. **DSP** appears when the effect is turned on.

Notes:

- Only one DSP effect can be applied at a time.
- Each demo tune has its own DSP effect. You cannot change or cancel it.
- Changing the DSP effect during play might cause a slight break in the tone.
- DSP effects are also applied to rhythm and auto accompaniment. DSP effects 3 through 6 and 8 might produce a non-suitable effect to rhythm or auto accompaniment. You can turn off the application of the effect to the rhythm or

accompaniment by using the mixer function. See “Using the Mixer” on Page 20.

- If you adjust **VOLUME** toward **MAX** (maximum) while **LOUDNESS** is set, you might notice a distortion in some tones or rhythms. If this occurs, adjust **VOLUME** toward **MIN**.

USING SOUND RANGE SHIFT

Each tone built into the keyboard has its own range (see “Note Table” on Page 45). Some tones, can be adjusted one octave higher or lower.

The following table shows the available tone adjustments.

Tone No.	Name	Can Shift One Octave...
032	Acoustic Bass	Lower
033	Fingered Bass	Lower
034	Picked Bass	Lower
035	Fretless Bass	Lower
036	Slap Bass 1	Lower
037	Slap Bass 2	Lower
038	Synth Bass 1	Lower
039	Synth Bass 2	Lower
043	Contrabass	Lower
072	Piccolo	Higher

To shift the tone range, press **MIDI** then repeatedly press ▼ until **Shift** and the current setting appear. Then, within 5 seconds, repeatedly press **+** or **–** to change the setting. **On** or **Off** appears.

USING SPLIT

The split feature lets you play two different tones on opposite ends of the keyboard, so the low keys play one tone, and the high keys play another.

1. Press **TONE**.
2. Enter the three-digit number for the tone you want the high keys to play.
3. Press **SPLIT**. The **SPLIT** indicator appears.
4. Enter the three-digit number for the tone you want the low keys to play.

   Note: The low and high key tones appear on the display, alternating every 5 seconds.
5. Hold down **SPLIT** and press the key where you want the high tones to begin. The selected key’s name appears.

   For example, if you set the split point to be F below middle C, **F3** appears.

   Note: You can change the split point at any time.
6. Play both the low and high keys to hear the selected split tones.

To select a different low tone, enter the three-digit number for the new low tone while the name and number of the low tone appear. To select a different high tone, enter the three-digit number for the new high tone while the name and number of the high tone appear.

To cancel split play, repeatedly press **SPLIT** until **SPLIT** disappears.

Notes:

- If the SPLIT indicator is on when you turn off the keyboard, split will still be on the next time you turn on the keyboard.

- When you use split, the last selected settings appear.
- The keyboard uses mixer channel 1 as the high tone and channel 3 as the low tone. You can use the keyboard's mixer function to change the volume balance or stereo pan position for each tone (see "Using the Mixer" on Page 20).

USING LAYER

The keyboard lets you play two different preset tones at the same time, creating a layered effect when you press one key. The first tone you select when using layer is called the *base tone* and the second tone is called the *layer tone*.

1. Press **TONE**.
2. Enter the three-digit number for the base tone, then press **LAYER**. **LAYER** appears.
3. Enter the three-digit number for the Layer tone.
4. Play the keyboard to hear the selected layered tones.

To select a different Layer tone, enter the three-digit number for the new layer tone while the layer tone appears. To select a different base tone, enter the three-digit number for the new base tone while the base tone appears.

To cancel Layer, repeatedly press **LAYER** until **LAYER** disappears.

Notes:

- If the layer indicator is on when you turn off the keyboard, Layer will still be on the next time you turn on the keyboard.
- When you turn on Layer, the previous tone settings appear.
- The keyboard uses the mixer channel 1 as the base tone and channel 2 as the layer tone. You can use the keyboard's mixer function to change the volume balance or stereo pan position for each tone (see "Using the Mixer" on Page 20).

USING SPLIT AND LAYER TOGETHER

You can combine the Split and Layer features, so you can play one layered combination of tones on the low keys and another on the high keys.

1. If the SPLIT or LAYER indicator is on, press **SPLIT** or **LAYER** to turn it off.
2. Enter the number for the high base tone on the keypad.
3. Repeatedly press **SPLIT** until **SPLIT** appears.
4. Enter the number for the low base tone.
5. Repeatedly press **SPLIT** until the **SPLIT** disappears.
6. Repeatedly press **LAYER** until the layer indicator appears.
7. Enter the number of the layered tone for the high keys.
8. Press **SPLIT**. **SPLIT** appears.
9. Enter the number of the layered tone for the low keys.
10. If desired, hold down **SPLIT** then press the key where you want the high tones to begin.
11. Play the keyboard to hear the selected tones.

To cancel the Split/Layer combination, press each button so both **SPLIT** and **LAYER** disappear.

Hint: You can use the mixer function to control the individual tone. For example, you can turn off channel 4 so the keyboard generates a single tone at the low end and a layered tone at the high end. See “Using the Mixer” on Page 20.

USING THE PRESET AUTO-RHYTHMS

Your keyboard has 120 preset auto-rhythms that provide a steady beat for your music. The name and two-digit number of each preset auto-rhythm is listed on the left side of the keyboard.

You can play a preset auto-rhythm on the keyboard in any of the following ways:

- select and play a rhythm (see “Selecting/Playing an Auto-Rhythm”)
- synchronize the start of a rhythm with your music (see “Using SYNCHRO” on Page 16)
- start a rhythm with a special introduction (see “Using INTRO” on Page 16)
- briefly vary the pattern of a rhythm (see “Using NORMAL/FILL-IN” on Page 16)
- stop a rhythm with a special ending (see “Using ENDING” on Page 16)
- play an alternate version (variation) of a rhythm (see “Using VAR/FILL-IN” on Page 16)

Selecting/Playing an Auto-Rhythm

1. Press **RHYTHM**. **RHYTHM** and the name and number of the current auto-rhythm appears.

   Note: The keyboard automatically selects the rhythm 8 BEAT 1 (No. 000) when you turn the power on. Each time you turn it on after that, it selects the last selected rhythm.

2. To select a different rhythm, choose an auto-rhythm from the 120 RHYTHMS list and enter its three-digit number on the keypad. Or, repeatedly press **+** or **–** to move to the next higher or lower numbered rhythm.

   Notes:

   - Enter three digits for the rhythm number. For example, press **0 0 5** to select PIANO ROCK (No. 005).
   - Rhythms 110–119 are chord accompaniment only without percussion effects. Therefore, these rhythms do not sound without activating auto-accompaniment (see “Using Auto Accompaniment” on Page 16).
   - If you incorrectly enter the first digit of the rhythm, press **RHYTHM** to clear the entry and return to the last selected auto-rhythm.

3. If necessary, repeatedly press **MODE** until all indicators turn off, then press **START/STOP** to start the selected auto-rhythm.
4. Adjust **VOLUME** to the desired level.
5. To change the auto-rhythm speed, press (or hold down) **TEMPO** ▼ or ▲. The current tempo setting appears.

   Notes:

   - You can adjust the tempo to play an auto-rhythm from 30 to 255 beats per minute.
   - To reset the tempo to its default (original) speed, press **TEMPO** ▼ or ▲ at the same time.

6. Play the keyboard along with the auto-rhythm.

7. To select a different rhythm, repeat Steps 1–2.

8. To stop the auto-rhythm, press **START/ STOP**.

Using SYNCHRO

This feature lets you synchronize the start of an auto-rhythm with the beginning of your music.

After you select and enter an auto-rhythm, press **SYNCHRO/ENDING**, then begin playing the keyboard. The keyboard automatically begins to play the rhythm when you press any key within the first 2 octaves and a tone of the lower end of the keyboard (the first 26 keys from the left side of the keyboard).

Using INTRO

This feature lets you start the selected auto-rhythm with a light, 3- to 8-measure introduction that blends easily into the selected rhythm.

To start a rhythm with an introduction, select and enter the rhythm, then press **INTRO**. The introduction plays, then the selected auto-rhythm automatically starts.

Using NORMAL/FILL-IN

This feature lets you insert a short (1- to 2-measure) variation in the beat pattern of a selected auto-rhythm.

Simply press and release **NORMAL/FILL-IN** while the auto-rhythm is playing. The keyboard inserts a 1- to 2-measure variation, then the original rhythm automatically resumes at the end of the current measure.

Using VAR/FILL-IN

Each of the keyboard's 120 preset auto-rhythms has a built-in variation (alternate) to its normal beat pattern. The variation differs slightly from the normal rhythm, so it is almost like having two rhythms in one!

To play the alternate rhythm, press **VAR/FILL-IN**. The variation plays continuously at the selected tempo.

To insert the fill-in segment in the alternate rhythm, press **VAR/FILL-IN**. The keyboard adds a 1- to 2-measure variation in the rhythm.

To return to the normal rhythm, press **NORMAL/FILL-IN**.

To stop the auto-rhythm, press **START/ STOP**.

Using ENDING

To end the selected rhythm with a special 3- to 8-measure flourish, press **SYNCHRO/ENDING** while the auto-rhythm is playing, about 3 – 8 measures before you want the rhythm to end. The keyboard plays a special ending, then automatically stops the rhythm.

USING AUTO ACCOMPANIMENT

The 26 keys on the left side of the keyboard with note labels above them are called *Accompaniment Keys*.

You can set the keyboard to play three different types of auto accompaniment using the accompaniment keys.

- *Concert Chord* — lets you play chords on the accompaniment keys using chord formations of one to four notes. The number of keys you press determines the type of chord that plays (see "Concert Chord" on Page 17).

- *Standard Fingering* — lets you play chords on the accompaniment keys using standard chord formations of three

or four notes (see “Standard Fingering” on Page 18).

- *Full-Range Chord* — lets you play the melody using the entire keyboard while the keyboard plays accompaniment based on your auto-rhythm selection (see “Full-Range Chords” on Page 19).

Notes:

- You can use the keyboard’s rhythm controls (**INTRO**, **NORMAL/FILL-IN, VAR/FILL-IN,** and **SYNCHRO/ENDING**) with all three types of auto accompaniment.
- After you press the auto accompaniment keys while using concert chord or standard fingering, the keyboard plays the same chord until you press other accompaniment keys to play a different chord or press **START/STOP**.

Adjusting the Accompaniment Volume

The keyboard lets you adjust the volume of your accompaniment separately from the overall volume of the keyboard.

1. Press **CH5/ACC VOL**. The current accompaniment volume setting appears.
2. Within 5 seconds, press or hold down ▼ or ▲. The numbers appear as you press the keys.

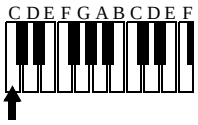
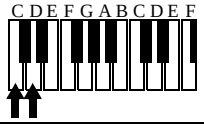
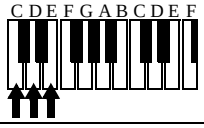
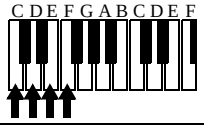
Notes:

- The auto-accompaniment patterns consist of five parts: chord 1, chord 2, chord 3, bass, and rhythm. You can delete any of the parts by using the mixer function. See “Using the Mixer” on Page 20.
- The auto-accompaniment volume setting is effective only in the keyboard’s internal mode. You cannot change the volume setting for the songs received through the **MIDI IN** terminal. See “Using the Mixer” on Page 20 for more information.

Concert Chord

The concert chord method lets beginning keyboard players easily select and play a chord.

The number of accompaniment keys you press determines the type of chord that plays. This chart shows the chord type that plays when you press one, two, three, or four accompaniment keys at the same time.

Number of Keys Pressed	Chord Type
	Major
	Minor (m)
	Dominant Seventh (7)
	Minor Seventh (m7)

The lowest note you play determines the key of the chord. For example, if the lowest note is C, the keyboard plays a C chord.

Note: You can press *any* labeled note(s) to the right of the lowest note in the chord to produce a minor, a dominant seventh, or minor seventh chord.

Follow these steps to start concert chord auto accompaniment.

1. Repeatedly press **MODE** until the CONCERT CHORD indicator lights.
2. Select and enter an auto-rhythm number.
3. To start the auto-rhythm before the auto accompaniment, press **START/STOP** or **INTRO**. Or, to synchronize the start of the selected auto-rhythm with your accompaniment, press **SYNCHRO/ENDING**.
4. Begin the accompaniment at the desired interval by pressing the desired accompaniment key(s). To play a melody along with the accompaniment, press any key(s) to the right of the accompaniment keys.
5. Adjust the tempo and **VOLUME** to the desired levels.
6. To change chords without interrupting the rhythm, simply press the auto accompaniment key(s) required to form the new chord.
7. To stop auto accompaniment and the auto-rhythm, press **START/STOP** (or **SYNCHRO/ENDING** to end with a special pattern).

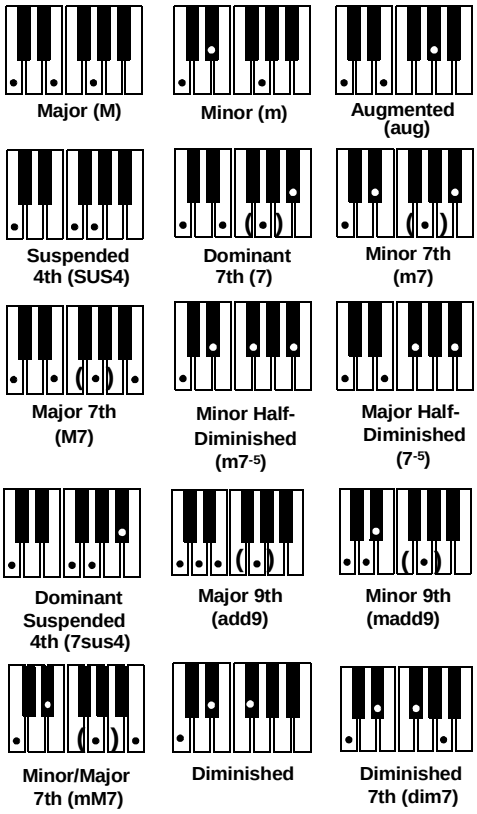
Standard Fingering

Notes:

- You do not have to press the key marked with parentheses on the keyboard in the preceding chart to produce a 7, m7, M7, mM7, add9, or madd9 chord.
- This chart shows only one possible fingering position for each chord. It is possible to play a chord using several different positions. For example, the following three fingering positions produce the same C chord.

The standard fingering method uses standard formations of three or four notes, and lets the experienced musician play a wider variety of accompaniment chords.

This chart shows the 15 chord types you can play on your keyboard by using standard fingering.



- When you play an aug, 7^5, or dim7 chord, the lowest note you play determines the root of the chord. Be sure that your fingering correctly defines the root you want.

Note: See “Fingered Chord Chart” on Page 50 for a list of all the chords you can play on your keyboard using standard fingering accompaniment.

1. Repeatedly press **MODE** until the FINGERED indicator lights.
2. Select and enter an auto-rhythm.
3. To start the auto-rhythm before your auto accompaniment, press **START/STOP** or **INTRO**. Or, to synchronize the start of the selected auto-rhythm with your accompaniment, press **SYNCHRO/ENDING**.
4. Begin the accompaniment at the desired interval by pressing at least three accompaniment keys to play the desired chord. To play a melody along with the accompaniment, press any key(s) to the right of the accompaniment keys.
5. Adjust **TEMPO** and **VOLUME** to the desired levels.
6. To change chords without interrupting the rhythm, simply press the auto accompaniment keys required to form the new chord.
7. To stop auto accompaniment and the auto-rhythm, press **START/STOP** (or **SYNCHRO/ENDING** to end with a special pattern).

Full-Range Chords

While the concert chord and standard fingering methods limit chord formations to the accompaniment keys, the full-range chord method lets you play chords of any type using any of the keyboard’s keys.

Repeatedly press **MODE** until the FULL RANGE CHORD indicator lights, and follow the steps under “Standard Fingering” on Page 18. If you press three or more keys anywhere on the keyboard that form a chord, the keyboard plays that chord. The keyboard responds with melody sounds if you press fewer than three keys.

Notes:

- In the full-range chord mode, the keyboard recognizes these 23 chords in addition to the 15 chords in the standard fingering mode (examples show C as the base note):

C6	Cm6	C69	Gm7/C	A♭ add 9/C	E/C
F/C	G/C	A♭/C	C#/C	D/C	C#m/C
Dm/C	Fm/C	Gm/C	B♭/C	B/C	A♭7/C
F7/C	Fm7/C	Am/C	B♭m/C	$Dm7^{-5}$/C	

- When the composite notes of a chord are more than five notes apart, the lowest sound becomes the base note.

Using Auto Harmonize

When you use auto-accompaniment in the fingered or concert chord modes, press **AUTO HARMONIZE** to automatically add harmony to your melodies. **AUTO HARMONIZE** appears, and the keyboard adds harmony based on the chord playing on the accompaniment key section.

Notes:

- Auto harmonize does not work when you select full range chord auto accompaniment or no auto accompaniment.
- You cannot use Auto Harmonize and Layer at the same time.
- The harmony melody in Auto Harmonize mode uses Channel 2. You can change the tone or volume setting of the har-

mony by using the keyboard's mixer (see "Using the Mixer" on Page 20).

Using One-Touch Preset

The keyboard's one-touch preset feature recalls the following characteristics for a rhythm you select:

- tone
- tempo
- volume
- layer on/off
- auto harmonize on/off
- selection of tones for layer or auto harmonize
- accompaniment volume

After selecting a rhythm, press **ONE TOUCH PRESET**, then start the accompaniment. As you play, the rhythm plays at the settings you selected, and the keyboard sounds the selected tone for the rhythm you selected.

Using Free Session

You can set the keyboard so it plays an automatic accompaniment (based on your auto-rhythm selection) while you play a melody using a tone you select. Refer to the "Free Session Chord Progression Chart" on Page 52 for the chord progression, tempo, and tone associated with each auto-rhythm.

1. Press **RHYTHM**.
2. Select and enter an auto-rhythm.
3. Press **FREE SESSION**. The Free Session indicator lights.
4. To start the free session accompaniment, press the accompaniment key for the root of the first chord key. For example, if the tune you are going to play is in G, press the key for G on the accompaniment keyboard.

   Notes:

   - Pressing **START/STOP** also starts a free session, but the root key is automatically set to C. To use a key other than C, press **SYNCHRO** to enter the free session standby mode, then press **INTRO** and play the note(s) to specify the key. The free session starts with the Intro pattern in the specified key.
   - You can start free session accompaniment with a short introduction by pressing **INTRO**, but the root key is automatically set to C.
5. Each free session has its default tone. You can change the tone by pressing **TONE** and entering the tone number.
6. Adjust **TEMPO** and **VOLUME** to the desired levels.
7. Play your melody using the entire keyboard.
8. To stop the free session accompaniment, press **START/STOP**.

To end the Free Session accompaniment with a short automatic ending, press **SYNCHRO/ENDING**.

USING THE MIXER

The keyboard plays multiple parts at the same time during Auto Accompaniment, while using the sequencer, or when receiving MIDI data, in up to 16 separate channels. You can control the on/off setting, volume, and parameters of each of the keyboard's channels just as you would with a sound mixer.

This chart shows the parts assigned to each channel.

Channel	Part
1 UPPER1	Main tone
2 UPPER2	Layered/Auto Harmonize tone
3 LOWER1	Split tone
4 LOWER2	Layered/split tone (or Auto Harmonize)
5 ACC VOL	Accompaniment volume
6 CHORD 1	Auto accompaniment chord 1
7 CHORD2	Auto accompaniment chord 2
8 CHORD3	Auto accompaniment chord 3
9 BASS	Auto accompaniment bass part
10 RHYTHM	Auto accompaniment rhythm
11 TR1	Song Sequence Track 1
12 TR2	Song Sequence Track 2
13 TR3	Song Sequence Track 3
14 TR4	Song Sequence Track 4
15 TR5	Song Sequence Track 5
16 TR6	Song Sequence Track 6

Notes:

- Normally, keyboard play is assigned to Channel 1 and the drum pads are assigned to Channel 10. When you use auto accompaniment, each part is assigned to Channels 7–10.
- When you use the keyboard as the sound source for another MIDI device, all 16 channels are assigned musical instrument parts (Channel 10 is reserved for drum parts only, per MIDI standard).
- The mixer settings also affect the corresponding MIDI output.

Mixer Modes

Your mixer has two modes; Internal and External. Internal mode is for keyboard play, without connecting any external device. External mode is when you connect another device through the keyboard's MIDI ports. The keyboard stores the settings for internal and external modes separately.

Editing the Status of a Channel

You can edit the status (On, Off, Solo) of a channel to delete a specific part or to play a specific part by itself.

To edit the status of a specific channel, select the mixer mode by repeatedly pressing **MIXER SELECT** until the desired mode appears (**INTERNAL**, **EXTERNAL**, **EXTERNAL SOLO,** or **EXTERNAL PLAY**). Then press **CHANNEL**.

- **Internal Mode:** Pressing a **CHANNEL** button toggles between on and off (except CH5, which changes the auto accompaniment volume).
- **External Mode:** Pressing a **CHANNEL** button toggles between on and off.
- **External Solo Mode:** Pressing a **CHANNEL** button turns that channel on and all other channels off.
- **External Play Mode:** Pressing a **CHANNEL** button turns that channel off and all others on.

The channels that are on have thick frames in the channel number display, while the

channels that are off have only channel numbers.

To exit the Edit mode, press **ENTER**.

Note: In the Internal mode, channels 6 to 10 control the auto-accompaniment pattern. When you select a new rhythm, the contents of these channels are set to the default setting of the newly selected rhythm.

For more information on the External mode, see “Using the Mixer and MIDI” on Page 42.

Editing the Parameter

You can change the settings of seven parameters such as tone, volume, and pan (relative position of the tone between the left and right speaker channels) for the selected channel.

Note: Be sure to turn off the synthesizer, song sequencer, or pattern sequencer (if any of these are turned on) before editing a parameter.

1. Repeatedly press **MIXER SELECT** to select the mode.
2. Repeatedly press ◀ or ▶ to select the channel. The channel number frame for the selected channel flashes, and the measure number display shows the current on/off status of that channel.

   Note: You can edit the tone and volume parameters at this stage without entering the parameter edit mode. Press **+** or **–** to change the tone or ▼ or ▲ to change the volume.
3. Press **ENTER** to enter the parameter edit mode.
4. Repeatedly press ▼ or ▲ to select the parameter you want to change. The display shows the parameter and number:

   Program Change Number (000 to 231) — sets the tone assigned to the channel.

   Note: Channel 10 is reserved for percussion, so only tone numbers 192 through 199 can be set for Channel 10.

   Volume (000 to 127) — controls the volume of the selected channel.

   Pan (000 to 127) — controls the pan. 000 is fully left, 64 is the center position, and 127 is fully right.

   Effect (000 to 127) — controls the depth of the DSP effect (except enhancer and loudness).

   Fine Tune (–50 to +50) — fine tunes the pitch of the selected channel in cent units. A cent is one hundredth of a semitone. There are 12 semitones per octave.

   C (Coarse) Tune (–12 to +12) — coarsely tunes the pitch of the selected channel in semitone units.

   Express (Expression) (000 to 127) — controls the volume of the selected channel. Similar to the volume setting, this is often used to control crescendo/decrescendo.
5. Use **+** or **–** to change the parameter setting.
6. To edit other channels, press **ENTER** to return to the channel selection display, select the channel, then repeat Steps 2–5.

To exit the Parameter Edit mode, press **ENTER** at the channel selection display.

USING THE CUSTOM TONE SYNTHESIZER

The keyboard’s custom tone synthesizer lets you create up to 32 of your own original

tones. To create a “user” tone, you simply select one of the keyboard’s preset tones, change its parameters, then store the new tone in any memory location from 200–231. You select and use a user tone the same as a preset tone.

Notes:

- You cannot use tones 192–199 (drum set tones) as base tones.
- The preset tone you use as the basis for a user tone is not changed.
- The tone locations 200–231 are not empty (before you store user tones there). They initially contain duplicate versions of tone numbers 128–159. The user tone you store in any of those locations replaces the existing tone. If you delete a user tone, the keyboard automatically restores the initial, duplicate tone there.

Changeable parameters are divided into four groups (see “Creating and Storing a User Tone”).

- **Tone Characteristic Waveform** — PCM Set
- **Volume Characteristic** — Amp Envelope Set
- **Tone Pitch** — Pitch and Pitch Envelope Set
- **Tone Characteristic** — Attack Rate, Release Rate, Level, Touch Sensitivity, Pan, Filter Sensitivity, Filter Level, and Transpose

Understanding 1DCO and 2DCO Tones

A Digital Controlled Oscillator (DCO) controls the sound output of a digital signal. Some of the keyboard’s built-in tones are simple tones (1DCO), and some are layered tones (2DCO). When you select a 2DCO tone as the basis for creating a user tone, you need to change the parameters of both tones.

When you select a layered tone, **dCo2** appears, indicating that you must set the parameters of both tones.

Creating and Storing a User Tone

Follow these steps to create and store your own tone. (Refer to “Hints on Creating a User Tone” on Page 25.)

Notes:

- A new or revised user tone replaces the existing user tone.
- Layer, split, auto accompaniment, demo tune play, auto harmonize, song sequencer, pattern sequencer, and MIDI functions are all disabled while the keyboard is in the Custom Tone Synthesizer mode.

1. Select the preset tone (except 192–199) you want to use as a basis for your user tone.
2. Press **SYNTH**. SYNTH lights and DCO1 (simple tone) or DCO2 (layered tone) appears.

   Note: To cancel the save operation at any time, press **SYNTH** or **TONE** twice.
3. Repeatedly press ◀ or ▶ to display the parameter you want to change.

   PCM Set (0 to 288) — Determines the characteristic of a tone by changing its digitally sampled waveform.

   Amp Envelope Set (Aenv) (0 to 288) — Selects the volume envelopes. Samples of the amp envelopes appear in a graph near your keyboard’s right speaker.

Attack Rate (AtkR) (1 to 127) — Sets the speed of the attack (the period from when you press a key to when the tone reaches its maximum volume). The greater the value, the quicker the attack. Use this parameter to make fine adjustments to the tone characteristics of the amp envelope.

Release Rate (RelR) (1 to 127) — Controls the speed of a tone's release (the period from when you release a key to when the tone stops sounding). The greater the value, the quicker the release. Use this parameter to make fine adjustments to the tone characteristics of the amp envelope.

Pitch Envelope Set (Penv) (0 to 45) — Selects the pitch envelopes. 00 specifies no change, a value from 01 to 17 changes the vibrato, and a value from 18 to 45 changes a parameter other than the vibrato. Samples of the pitch envelopes appear in a graph near your keyboard's right speaker.

Pitch (Ptch) (–64 to +63) — Controls the overall pitch of the tone. A positive value increases the pitch, a negative value lowers it. A setting of zero sets the pitch to the standard setting for the selected tone.

Transpose (Tran) (–12 to 12) — Raises or lowers overall tuning by semitone units. A positive value raises the tuning, a negative value lowers it.

Level (Lvel) (0 to 127) — Controls the overall volume of the tone. The greater the value, the greater the volume. Setting a level of zero means that the tone does not sound at all.

Touch Sensitivity (Tsns) (–64 to +63) — Controls changes in the volume of the tone, depending on how hard you strike the keys. You can specify more volume for stronger striking and less volume for lighter striking, or you can specify 00 to set the same volume regardless of how hard you strike the keys.

Pan (Pan) (–64 to +63) — Controls the relative position of the tone between the left and right speaker channels. A greater positive value moves the center point further to the right, a negative value moves it to the left.

Filter Sensitivity (Fsns) (000 to 127) — Controls changes in the quality of the tone, depending on how hard you strike the keys. A greater value increases the change in tone quality; a smaller value decreases it. A setting of zero specifies no change.

Filter Level (Flev) (000 to 127) — Controls how the digital filter affects the tone. The greater the value, the more open the filter and the clearer the sound. A smaller value softens the sound.

4. Use **+** or **–** to change the parameter's setting. You can also use the number buttons to directly enter a value for the parameter.

   Notes:

   - If you want to change another parameter, repeat Steps 3 and 4.
   - If you selected a layered preset tone, press ▼ twice to recall the DCO2 parameters (**d Co2** appears), and repeat Steps 3 and 4 to set the parameters. Press ▲ twice to return to the DCO1 parameters.

5. Press **SYNTH**. **Save?** appears.

   To store the settings, press **YES** to display the tone number where you want to save the user tone.

   To exit the Custom Tone Synthesizer mode without storing a new tone, press

NO. **Delete?** appears. Then press **YES**.

6. Press **+** or **–** until the tone number you want appears. If you do not want to assign a name, skip to Step 10.
7. To give a name to your tone, press **ENTER**. The first character of the tone name flashes.
8. Repeatedly press **+** or **–** until the first character of the new name appears.
9. Press ▶ to move to the next character position. Repeat Steps 8 and 9 to enter the rest of the characters in the new name.
10. Press **ENTER**. **Replace?** appears. Press **YES** to save the user tone. Otherwise, press **NO**. The keyboard returns to Step 5 above.

    Note: To cancel the save operation and exit the synthesizer mode, press **SYNTH** or **TONE**. Press **SYNTH** again before selecting another tone to return to the synthesizer mode while retaining all of the settings you made.

Hints on Creating a User Tone

- Use a preset tone that is similar to the one you are trying to create. When you already have a general idea of the tone you are trying to create, it is a good idea to start with a similar preset tone. If you want to use a layered tone, start out with a 2DCO tone.
- Determine the most important parameter. The PCM Set and Amp Envelope Set parameters are the major factors that determine the overall tone characteristic. Start out by setting these two parameters to get the general sound you want, then set the other parameters to add the finishing touches.
- Experiment with different settings. There are no real rules about what a tone should sound like. Let your imagination run free and experiment with different combinations. You might be surprised at what you can achieve!

❒ *Special Features*

CHANGING KEYS

The keyboard automatically selects the key of middle C each time you turn it on.

For added flexibility as you play, the keyboard lets you change (transpose) the musical key in which it plays.

Press **TRANSPOSE** ▲ to raise the key or ▼ to lower the key. Each time you press ▲ or ▼, the number increases by one semitone.

As you raise the key, **1** is C♯, **2** is D, and so on. As you lower the key, **–1** is B, **–2** is B♭, **–3** is A, and so on.

Notes:

- You cannot change the key while a demo tune is selected or playing.
- The number on the display is the number of “semitones” to which the keyboard is set, compared to its default key. A semitone is a measurement that represents the acoustical interval between the tones of any two keys on the key-

board. For example, the difference between C and C♯ or B and B♭ is one semitone. You can transpose the key down 6 semitones (to an F♯) and up 5 semitones (to an F) — a full octave.

- The transpose setting also affects song sequencer playback and auto accompaniment.
- The keyboard automatically resets the key to the default value of 0 (middle C) each time you play a prerecorded tune

TUNING THE KEYBOARD

Although your keyboard never goes out of tune, it lets you adjust its pitch to match other instruments or musical recordings.

Note: You cannot tune the keyboard while a demonstration tune is playing.

Follow these steps to tune the keyboard.

1. Press **TUNE.** **00 Tune** appears.

   Note: The number on the display is the number of "cents" to which the keyboard is currently tuned, compared to its default pitch. A cent is the measurement that represents the acoustical interval between two tones. 1,200 cents equal 1 octave. You can tune the keyboard to within 50 cents (101 levels) of its default pitch.

2. Repeatedly press **–** or **+** to lower or raise the keyboard's pitch. Each time you press the key, the number decreases or increases by 1 (cent).

Notes:

- Memory playback uses the pitch with which the memorized tune was recorded.
- Auto accompaniment and the sequencer use the currently set pitch.
- The keyboard automatically resets the tuning pitch to the default value of 00 (cents) each time you turn off the keyboard.

USING TOUCH RESPONSE

Your keyboard has a touch response feature that lets you adjust the volume of your music's tone based on how hard you strike the key(s), so you can add emotion to your music.

Repeatedly press **TOUCH RESPONSE** until **TOUCH RESPONSE** appears (On) or disappears (Off).

Notes:

- The touch response setting does not affect song sequencer, auto accompaniment, or received MIDI data.
- The MIDI data sent out from the keyboard is affected by the touch response setting.
- Touch response affects different tones in different ways.

Setting the Touch Response Sensitivity

1. Press **TOUCH RESPONSE** to turn on touch response.
2. Within 5 seconds, repeatedly press **–** or **+** or enter one of the following numbers using the number keys to select the sensitivity:

- **0** ExLight — produces a stronger sound even when you lightly touch the keys
- **1** Light
- **2** Normal

- **3** Heavy — requires very heavy key pressure to produce a sound
- Touch Off

USING PITCH BEND

Your keyboard has a pitch bend feature that lets you bend a note by altering its pitch. Pitch bend lets you create realistic effects for sounds such as a saxophone, other reed instruments, and guitar tones.

To use pitch bend, select a tone, then rotate and hold **PITCH BEND** while holding down a key. The pitch of the key you pressed slides smoothly up and down. Release **PITCH BEND** to stop the effect.

Adjusting the Pitch Bend Range

You can adjust the bend range of pitch controls from 1 to 12 semitones.

Note: The keyboard automatically selects a bend range of 2 semitones the very first time you turn it on. Each time you turn it on after that, it recalls the last selected bend range.

1. Press **MIDI**, then repeatedly press ▼ until a number and **Bend** appear.
2. Within 5 seconds, repeatedly press **+** or **–** until the pitch bend range you want appears, or enter a number from **00** to **12**.

USING THE MODULATION WHEEL

Your keyboard's modulation wheel lets you apply a vibrato effect to notes by modulating their pitch. Modulation works best with sustained notes, like those from a bowed violin.

To use the modulation wheel, play a tone, then rotate **MODULATION** while holding down a key. The vibrato slides smoothly up and down. Release **MODULATION** to stop the effect.

USING A SUSTAIN PEDAL

For added flexibility and control as you make music, you can connect a sustain pedal (not supplied), available through your local RadioShack store. A sustain pedal lets you sustain or soften the keyboard's sound, and even start or stop an auto-rhythm.

To connect a sustain pedal to your keyboard, insert the pedal's plug into **SUSTAIN/ASSIGNABLE JACK** on the back of the keyboard.

You can adjust the keyboard to these settings when you use a sustain pedal.

Setting	Description
SUS (Sustain)	Causes one or more notes to linger after they are played.
SoS (Sostenuto)	Similar to SUS, but only sustains one note just played.
SFt (Soft)	Softens the sound.
rHy (Rhythm)	Starts or stops the selected auto-rhythm.

1. Press **MIDI**, then repeatedly press ▼ until **Jack** and the current setting appear.
   - Within 5 seconds, repeatedly press **+** or **–** until the desired setting (**SUS**, **SoS**, **SFt**, or **rHy**) appears.

Press the sustain pedal as you play to hear the desired sound or to start/stop the selected auto-rhythm.

USING THE REGISTRATION MEMORY

The keyboard lets you save your favorite settings in its registration memory and instantly recall them. The memory consists of four banks (0–3), each with five memory locations (A–E), totaling up to 20 settings.

- tone
- rhythm
- tempo
- split on/off
- split point
- layer on/off
- auto harmonize on/off
- mixer settings
- keyboard channel on/off
- DSP on/off
- DSP settings
- accompaniment mode
- touch response settings
- assignable jack setting
- transpose
- tuning
- pitch bend range
- sound range shift on/off

Notes:

- You cannot use the registration memory while you are using the synthesizer, song sequencer, pattern sequencer, or demo tune function.
- You cannot delete a registration setup from memory, but you can store a different setup in its place.

Storing a Setup

1. Set the desired controls to the setting you want to store.
2. Repeatedly press **BANK** until the desired bank number appears.
3. Within 5 seconds, hold down **STORE** and press the desired **REGISTRATION** button (**A**–**E**). **Store** appears after the selected bank/location number/letter.
4. Release **STORE** and **REGISTRATION**.
5. Repeat Steps 1 through 4 to store more setups.

Recalling a Setup

1. Repeatedly press **BANK** until the desired bank number appears.
2. Within 5 seconds, press the desired **REGISTRATION** button (**A** - **E**). **Recall** appears after the selected bank/location number/letter for five seconds.

Note: If the setting you want to recall is in the same bank as the current one, skip step 1.

❒ *Recording*

USING THE SONG SEQUENCER

The keyboard lets you record up to two songs in memory for later playback. You can use either *real-time recording* (record as you play) or *punch-in recording* (enter notes from a specific section of a song already in memory).

You can record on each of the keyboard's six tracks separately. Besides notes, each track can have its own tone number. Then, when you play back the tracks together, it sounds like an entire six-piece band. Also, you can use different mixer settings for each track. Track 1 is the main track, and you can use it to record auto accompaniment as well as keyboard play. Tracks 2–6 are melody

tracks, and you can use them for recording a secondary melody that includes keyboard play.

Because each track is independent of the others, you can add a track while listening to the tracks you recorded previously, and you only need to re-record a single track if you make a mistake while recording on it.

The keyboard stores data for each of the following characteristics in the song sequencer memory:

- notes played on the keyboard
- initial tone setting and any change made thereafter
- pitch bend operation
- modulation operation
- pedal operation (when you use it)

In addition to the previous data, Track 1 carries the following data:

- initial rhythm pattern and any change made thereafter
- INTRO, SYNCHRO/ENDING, NORMAL/FILL-IN, and VARIATION/FILL-IN operation
- chord played on the accompaniment keyboard (real-time recording)
- chord specifications (punch-in recording)

The following data are not recorded:

- touch response on/off setting
- one-touch preset operation
- registration memory operation
- free session
- layer, split, and auto harmonize settings

The following data are set one time only:

- **Tempo** — The setting at the beginning of the recording is applied all through the recording. You cannot change tempo while recording.
- **Mixer (Channel 11–16)** — You can make the setting at the beginning of the recording only. However, you can change the setting after the recording is complete. The setting in effect during record standby mode is the one recorded.

There are two modes for the song sequencer — *record/playback mode* for recording and playing back, and *global mode* that sets the following on all the tracks:

- metronome setting
- song delete
- meter setting
- initial tempo value
- quantize setting after recording

Press **SONG** to enter the record/playback mode. The SONG indicator lights. Press **SONG** again to enter the global mode. The SONG indicator flashes. Press **SONG** again to exit the song sequencer mode.

MEMORY CAPACITY

Your keyboard's memory can store a total of about 4,900 notes. If the remaining memory is less than 100 notes, the measure and beat numbers flash. When the memory becomes full, recording automatically stops (auto-accompaniment or rhythm stops playing, if used).

Notes about Memory Contents:

- When you record on a track that contains data, the new recording replaces the previous recording.
- The keyboard comes with a built-in lithium battery that supplies power to the memory to retain song sequencer, pattern sequencer and other data while keyboard power is turned off. If the bat-

tery's power is low, turning off the keyboard power can result in deletion of all data stored in its memory.

- The normal life of the original battery is five years from the time it is loaded at the factory. Due to time spent in transit and storage, the original battery probably will not provide a full five years of service life. We recommend you take the keyboard to your local RadioShack store to replace the lithium battery before it depletes.
- Turning off the keyboard while recording erases the contents of the track you were recording.
- You can transfer memory contents to another MIDI device. See "Dumping/ Importing Data" on Page 42.

REAL-TIME RECORDING

With real-time recording, the notes are recorded as you play them on the keyboard.

Notes:

- You can change the tone or rhythm during recording. The changes are stored as part of the recording data.
- The tempo you use for recording does not affect the playback tempo. You can record at a slower tempo then play it back at normal/faster tempo.
- If you are not using the rhythm pattern, you need to define the meter.

On Track 1

1. Press **SONG**. The SONG indicator turns on.
2. Press **+** or **–** (or **0** or **1**) to select a song area (SG0 or SG1).

   Note: You can now change the mixer setting for channel 1 (see "Editing the Status of a Channel" on Page 21 and "Editing the Parameter" on Page 22). The contents of the mixer settings are copied to track 1.
3. Press **RECORD**. **REC** and the frame of the channel 11 indicator flash.

   Note: While the keyboard is in memory record mode, the level meters for channels 11 through 16 correspond to memory tracks 1 through 6. When all three arcs are lit, that channel has something in memory: if no arc is lit, that track is empty.
4. Select the tone, rhythm, and tempo, if necessary, then set **MODE** to the desired auto-accompaniment mode.
5. Press **START/STOP** to start recording. **REC** and the frame of the channel stops flashing and the metronome starts to sound. If you do not want the metronome, you can turn it off.
6. Play the keyboard. You can also record auto accompaniment chords, pitch bender, and pedal operations.
7. Press **START/STOP** to end recording. **REC** disappears.

If you make a mistake, press **START/STOP** to stop recording and begin again from Step 1, or you can punch in the recording. See "Punch-In Recording" on Page 31.

Note: If you change the rhythm pattern during recording, the meter value on the display remain unchanged, even when the new rhythm uses different meter.

Tips on Real-Time Recording:

- To record without rhythm, skip Step 5. The recording starts when you start to play.

- To use synchro start, press **SYNCHRO/ ENDING** instead of **START/STOP** in Step 5. Auto accompaniment and recording start when you play a chord.
- To add fill-in, variation, or ending, press the corresponding button during recording.
- To start recording with intro pattern, press **SYNCHRO/ENDING** then **INTRO** in Step 5. Auto accompaniment starts with intro pattern when you play a chord.
- To start auto accompaniment part-way into a recording, press **SYNCHRO/ENDING** in Step 5. Start playing on the melody keyboard, then, when you reach the point where you want to add accompaniment, play a chord on the keyboard.
- Tracks 2 through 6 are the melody track that you can use to record melody parts only. You can record different tones on these tracks and build a full ensemble of instruments.
- You can play back what you already recorded on Track 1 (or another track) while you record on Tracks 2–6.

On Tracks 2–6

Note: If you are recording right after you finished recording in track 1, skip Steps 1 and 2.

1. Press **SONG**. The SONG indicator appears.
2. Repeatedly press **+** or **–** to select a song number (SG0 or SG1).
3. Press **RECORD**.
4. Select the desired track using the **CHANNEL** button (12–16).

   Note: Check the display for Channels 11–16 to see which memory tracks contain data and which are empty.
5. Select any tone setting.
6. Press **START/STOP** to start recording. The contents of any tracks already recorded start to play.

   Note: If you do not want to play back the track(s) previously recorded, turn the channel(s) off. See “Using the Mixer” on Page 20.
7. Play what you want to record on the selected track.
8. Press **START/STOP** to end recording.
9. Repeat Steps 3 through 8 to record on other tracks.

PUNCH-IN RECORDING

On Track 1

Notes:

- You can change the tone or rhythm during recording.
- The rhythm pattern previously recorded is automatically selected at first, but you can change it during punch-in recording. However, the metronome display and rhythm beat might go out of synchronization with the rhythm that is playing.
- The tempo you use for recording does not affect the playback tempo. You can record at a slower tempo, then play back at normal/faster tempo.

1. Press **SONG**. The SONG indicator lights.
2. Repeatedly press **+** or **–** to select a song number (SG0 or SG1).
3. Press **RECORD**.

Note: Check the display for Channels 11–16 to see which memory tracks contain data and which are empty.

4. Select any tone setting.
5. Press **ENTER**. The keyboard enters the punch-in mode. **Punch In** appears.
6. Press **START/STOP**. The song stored in the selected memory starts to play.
7. When playback reaches the part you want to edit, play the new part on the keyboard. Playback stops and your notes are recorded. Continue playing until the end of the tune.

   Notes:

   - You can change the auto accompaniment during recording.
   - If a synchro start operation is already in memory, playing something on the accompaniment keyboard starts rhythm play and records it.

8. Press **START/STOP** to end the recording.

On Tracks 2–6

Note: If you are recording right after you finished recording in track 1, skip Steps 1 and 2.

1. Press **SONG**.
2. Repeatedly press **+** or **–** to select a song number (SG0 or SG1).
3. Press **RECORD**.
4. Select the desired track using the **CHANNEL** button (**12**–**16**).

   Note: Check the display for Channels 11–16 to see which memory tracks contain data and which are empty.

5. Select any tone setting.
6. Press **ENTER**. **PUNCH IN** appears.
7. Press **START/STOP**. The song stored in the selected memory starts to play.
8. When playback reaches the part you want to edit, play the new part on the keyboard. Playback stops and your notes are recorded. Continue playing until the end of the tune.

   You can enter a rest in a track by holding **ENTER** instead of playing on the keyboard.

9. Press **START/STOP** to end the recording.
10. Repeat Steps 3 through 9 to make a punch-in recording on other tracks.

PLAYING BACK FROM MEMORY

Note: If you just finished recording, skip Steps 1 and 2.

1. Press **SONG**.
2. Repeatedly press **+** or **–** (or **0** or **1**) to select a song area.
3. Press **START/STOP** to play back the song you selected.

   You can use **TEMPO** to adjust the playback tempo.

4. Press **START/STOP** again to stop playback.

Notes:

- Pressing **START/STOP** during the song resets it from the beginning.
- You can play along on the keyboard during playback.

- You can use Layer and/or Split during memory playback.
- You can set the volume and pan position of the playback tracks using the mixer. At this setting, data is output through **MIDI OUT**.
- You cannot change the MODE setting during playback.

DELETING A TRACK FROM MEMORY

Caution: Deleting from memory cannot be undone.

1. Press **SONG**.
2. Press **+** or **–** to select the song area that contains the track you want to delete.
3. Press **RECORD**.
4. Press **CHANNEL** for the desired track.
5. Press **+** or **–** at the same time. **dEL Sure?** appears.
6. Press **YES** to delete the track. **dEL Complete** appears. Otherwise, press **NO**.

Note: dEL No Data? appears if the track you selected contains no data.

DEFINING GLOBAL SETTINGS AND OPERATIONS

Global settings and operations affect all the tracks of a memory. The following are the keyboard's global settings:

- metronome setting
- song delete
- meter setting
- initial tempo value
- quantize setting after recording
- quantize execution

1. Press **SONG**.
2. Repeatedly press **+** or **–** to select the song area.
3. Press **SONG** again. The SONG indicator flashes, and the first item in the global setting menu appears.
4. Press ▶ or ◀ to recall the menu item you want to change.
5. Change the setting as desired for each menu item.

   Metr (Metronome) – Repeatedly press **+** or **–** to select the desired option. **Off** turns metronome off. **Rec** sounds only during recording (default setting). **R&P** sounds during recording and playback.

   SongnDel (Song n Delete) – Press **+** and **–** at the same time to delete the song. **dEL Sure?** appears. Press **YES** to delete. **dEL Complete** appears. Otherwise, press **NO**.

   Bt (Meter) – Use **+** or **–** to select the desired meter. You can select from 2/4, 3/4, 4/4, 5/4, 6/4, 7/4, 3/8, 5/8, 6/8, 7/8, and 9/8.

   Note: If a song is recorded with a rhythm, the meter of the rhythm is automatically set.

   Tmpo (Initial Tempo) – Use **+** or **–** to set the initial tempo in the range of 030 to 255.

   Note: You can change the tempo as you like during playback. Pressing both **TEMPO** keys at the same time reverts the tempo to the initial setting you set using this menu item.

   Qtz (Record Quantize Setting) – This setting determines the quantize value

after recording. Quantize adjusts the timing of notes to each track on the keyboard to match those selected by the setting you make here.

Select the channel you want to quantize using **CHANNEL**. Then press + or – to change the setting.

Channel	Quantize Setting
4	Quarter notes
8	8th notes
8T	Triplet 8th notes
16	16th notes
16T	Triplet 16th notes
32	32nd notes
32T	Triplet 32nd notes
64	64th notes

`Qtz` Exe? (Quantize Execute) – execute the quantize set by **`Qtz`**. Press **YES**. **`qt Pls Wait`** appears for about a second, then changes to **`qt Complete`**. Press **NO** to cancel.

6. If necessary, press ▶ or ◀ to recall another menu item and change the setting.

7. When finished, press **ENTER** to exit the global setting mode.

USING THE PATTERN SEQUENCER

The pattern sequencer lets you modify any of the keyboard's 120 built-in rhythms to create your own. Or you can create your original pattern from scratch.

Each auto accompaniment pattern is a group of six *elements*, **`nor`** (normal), **`int`** (intro), **`vAr`** (variation), **`FLn`** (normal fill in), **`Flu`** (variation fill in), and **`End`** (ending). Each element has five *parts* — rhythm, bass, chord 1, chord 2, and chord 3.

The pattern sequencer lets you record each part of an element.

You can set the following characteristics for each part:

- note on the keyboard
- pitch bend
- modulation
- pedal operation (if connected)

You can set the following characteristics for each element.

- number of measures for intro, normal, variation, ending (only when recording to a blank element)
- fill-in (is always one measure long, and cannot be changed)
- original key

You can set the tempo and beat once for each pattern.

You can set the following for each part of each element:

- **TONE** (button or mixer operation) — cannot be changed inside the element
- pan
- effect send
- expression
- chord conversion table
- break point

You can do the following while recording:

- turn the part (channel) on/off
- change the tempo
- change the tone, using either the tone or mixer function

Memory Capacity

You can store up to about 5,800 notes. If the remaining memory is less than 100 notes, the measure and beat numbers flash on the display. When memory becomes full, recording automatically stops.

Notes:

- You can store up to 10 rhythm patterns in rhythm numbers 120 through 129. Depending on the size of the patterns, memory might become full with less than 10 patterns.
- The keyboard comes with a built-in lithium battery that supplies power to the memory to retain the song sequencer, pattern sequencer and other data while the power is turned off. If the lithium battery power is low, turning off the power can result in deletion of all data stored in its memory.
- The normal life of the original battery is five years from the time it is loaded at the factory. Due to time spent in transit and storage, the original battery probably will not provide a full five years of service life. We recommend you have your local RadioShack store replace the lithium battery before it depletes.
- You can transfer memory contents to another MIDI device. See “Dumping/ Importing Data” on Page 42.

Pattern Sequencer Settings

The Pattern Sequencer has two settings: Pattern Create and Pattern Edit.

To create a pattern, press **PATTERN** once. The PATTERN indicator lights, and **`Ptn Normal`** appears.

To edit a pattern, while in Pattern Normal mode, press **PATTERN** twice. The PATTERN indicator flashes. Select **`Edt Global`**, **`Edt Element`**, **`Edt Part`**, or **`Edt Escape`**, to edit your pattern.

To move from Create to Edit, press **PATTERN**. To move from Edit to Create, press **ENTER**.

When you have finished editing your pattern, press **PATTERN**. **`Save?`** appears. Press **YES** to select the rhythm number or assign the name. Press **NO** to delete the pattern you created from memory.

Creating a Pattern

1. Select the rhythm you want to use as a base.
2. Press **PATTERN**. The PATTERN indicator lights and **`Ptn Normal`** appears. The rhythm you selected in Step 1 is now in the working area.

   Notes:

   - If the remaining memory is too small to store the selected rhythm, **`Ptn Mem Full`** appears and the keyboard enters the pattern creation mode with an empty working area. To make room, you must delete a pattern. See “Editing the Stored Pattern” on Page 36.
   - To create a new pattern from scratch, you first need to clear the working area. See “Editing the Stored Pattern” on Page 36.
3. Select the element you want to record by pressing the corresponding button – **NORMAL/FILL-IN**, **VARIATION/FILL-IN**, **INTRO**, or **SYNCHRO/ENDING** (for ending element).
4. Press **RECORD**. The REC indicator flashes.

5. Select the part you want to record. The rhythm part (channel 10) is selected initially. To select another part, press the corresponding channel button. The selected channel's frame fills in.

   Channel 6: Chord 1

   Channel 7: Chord 2

   Channel 8: Chord 3

   Channel 9: Bass

6. Press **START/STOP** or any key. The REC indicator stops flashing, and all the parts of the selected element start to play. You can now record notes in the currently selected part.

   Rhythm Part (Channel 10)

   Select channel 10, then select a drum sound (tone numbers 192 through 199). Use the keyboard to play the rhythm while watching the measure and beat value on the display.

   Bass Part (Channel 9)

   Select channel 9, then select a bass tone. Use the keyboard to play the bass part, while watching the measure and beat value on the display.

   1, 2, or 3 Part Chords (Channels 6, 7, or 8)

   Select the corresponding channel, then select a chord tone. Use any tone except the drum sounds. Then use the keyboard to play the chord, watching the measure and beat value on the display.

7. Press **START/STOP** to finish recording.

8. Repeat Steps 3 through 8 for each element of the pattern.

9. To save patterns, see "Saving the Settings" on Page 38.

Editing the Stored Pattern

1. While in the pattern create mode, press **PATTERN** to enter the pattern edit mode.

2. Repeatedly press ▲ or ▼ to scroll through the main menus, **`Edt Escape`**, **`Edt Global`**, **`Edt Element`**, or **`Edt Part`**.

   Except for the escape menu, each mode has the following sub-menus:

   - **`Glb`** (Global): **`Metr`** (metronome), **`Oct`** (octave shift), **`Work Del`** (work area clear/all delete), **`Bt`** (beat), **`Tmpo`** (tempo)
   - **`ELE`** (Element): **`Meas`** (measure), **`OrKey`** (original key)
   - **`Prt`** (Part): **`Chord`**, **`BkPnt`** (break point), **`Qtz`** (quantize), **`Qtz Exe?`** (quantize execute)

3. When the main menu you want appears, press **ENTER** or repeatedly press ◀ or ▶ to scroll through the sub-menus.

4. Repeatedly press **+** or **–** to change the sub-menu setting.

5. If necessary, repeatedly press ◀ or ▶ to switch to another sub-menu under the same main menu.

6. Press **ENTER** to return to the main menu level.

7. Repeat Steps 3 through 6 as necessary.

8. Select the **`Escape`** main menu and press **ENTER** to return to the pattern create mode.

Deleting Specific Notes

To delete notes, play the accompaniment pattern in the REC mode. Then, while holding down **+** and **–** at the same time, press the keyboard key(s) for the note(s) you want to delete. Press the key(s) just before the note(s) sound(s).

Deleting a Part

To delete the part, select the desired part during record standby and press **+** and **–** at the same time. **dEL Sure?** appears. Press **YES** to delete; otherwise, press **NO**.

Global Menu Items

Metronome: turns the metronome sound on or off. **Rec** (default setting) turns the metronome on only when recording, **R&P** turns the metronome on during recording and playback, **Off** turns it off entirely.

Octave shift: sets the tone an octave higher or lower. **–1** sets octave lower, **0** is original, **1** sets octave higher.

Work Area Delete: clears data in the work area. Use this to create your own pattern from scratch. Select **Work Del** sub-menu, then press **+** and **–** at the same time. **Sure?** appears. Press **YES** to delete. **dEL Complete** appears. Otherwise, press **NO**.

Beat: specifies beat (or meter) of the pattern. Default is 4/4. Select **2/4**, **3/4**, **4/4**, **5/4**, **6/4**, **7/4**, **3/8**, **5/8**, **6/8**, **7/8**, or **9/8**.

Note: The display shows ---- when you select a meter other than those listed above.

Tempo: sets the default tempo of the pattern. Use + or – to select the tempo desired. The initial value of this sub-menu is the default one set for the pattern you use as the base.

Note: If the pattern is playing, its tempo does not change immediately after you set the menu. Repeatedly press **TEMPO** ▼ or ▲ to set the pattern to have the newly set default tempo.

Element Menu Items

Measure: specifies the number of measures for each element (except fill-in). You can set this value *only* in these two cases:

- immediately after clearing the work area using the **Work Del** sub-menu
- after all the parts of the element have been deleted in the pattern create mode

Original Key: sets the key when played back. This setting overrides the chord conversion sub-menu under the **Part** menu. You can set this *only* in these two cases:

- immediately after clearing the work area using the **Work Del** sub-menu
- after all the parts of the element have been deleted in the pattern create mode

Part Menu Items

The settings are to be made for each part separately.

You can play back the auto accompaniment pattern by pressing **START/STOP** while you set the part menu parameters. This allows you to specify chords using any of the chord playing method (CONCERT CHORD, FINGERED, or FULL RANGE), then listen to the effect of the new setting.

Chord Conversion Table: selects the chord conversion setting. Normally, the accompaniment pattern is recorded in C. When you select a key with the accompaniment keyboard, the pattern is automatically transposed to the specified key. This might result in unnatural-sounding patterns. To compensate this, the

keyboard has 19 chord conversion tables to make the chord sound more natural. Select the table using the number keys (**0**–**18**). See "Chord Conversion Table" on Page 53.

Note: This setting does not work for rhythm parts. **-- --** appears when you select this menu item while you are on Channel 10, and you cannot enter any setting.

Break Point: specifies the break point. Once set, any chord above the break point is played in the next lower octave when you use CONCERT CHORD, FINGERED, or FULL RANGE.

Note: This setting does not work for rhythm parts. **-- --** appears when you select this menu item while you are on Channel 10, and you cannot enter setting.

Quantize: determines the quantize value after recording. The timing of notes previously recorded can be matched with the note timing of this setting.

Select any one of the following:

Channel	Quantize Setting
4	Quarter notes
8	8th notes
8T	Triplet 8th notes
16	16th notes
16T	Triplet 16th notes
32	32nd notes
32T	Triplet 32nd notes
64	64th notes

Note: The length of the last note in the pattern might be changed by this setting.

Quantize Execute: executes the quantize setting. **Qtz Exe?** appears. Press **YES**. **Complete** appears. Otherwise, press **NO**.

Saving the Settings

After you have finished creating a pattern, follow these steps to save the pattern.

1. If you were in pattern edit mode, select **Escape**, then press **ENTER** to go back to pattern create mode.
2. Press **PATTERN** twice. **Save?** appears.
3. Press **YES** to save the pattern.

   Or, to exit the pattern sequencer mode without storing the pattern, press **NO**. **Delete?** appears. Press **YES** to exit without saving the work area contents, or press **NO** to cancel the saving operation and return to the pattern sequencer mode.
4. Use the number buttons (or **+/–)** to specify the rhythm number location (between 120 and 129), then press **ENTER**.
5. Press ◀ or ▶ to move the cursor to the rhythm name input area.
6. Press **+** or **–** to select the characters and ◀ or ▶ to move the cursor to the next space, then press **ENTER**.

If the rhythm pattern exists in the specified location, **Replace?** appears. Press **YES** to replace the pattern or **NO** to return to Step 6 and enter a different location number.

After you replace the rhythm pattern, **Complete** appears briefly, then the keyboard exits the pattern sequencer mode.

❒ *Using MIDI*

Your keyboard includes a feature called MIDI (Musical Instrument Digital Interface). MIDI is the universal standard for sending and receiving performance data between all types of electronic musical instruments, regardless of the manufacturer. Using MIDI, you can play music on your keyboard and another instrument at the same time while pressing the keys on only one, record your music to a sequencer, acquire a wider selection of preset tones from a sound module, and much more.

ABOUT MIDI

Every MIDI-equipped instrument has MIDI OUT and IN terminals (including yours), and some also have a MIDI THRU terminal. Each of these terminals serves a different purpose.

MIDI OUT sends ("talks to") MIDI data to the other MIDI instrument(s).

MIDI IN receives ("listens to") MIDI data sent by the other MIDI instrument(s).

MIDI THRU lets you connect ("network") additional MIDI instruments, and sends along to other MIDI devices a copy of all data it receives through its MIDI IN terminal.

The cable that connects MIDI devices does not actually carry sound between them. Instead, MIDI-equipped devices communicate with each other using digital codes (instructions). One MIDI device sends digital instructions representing exactly what is being played. The other MIDI device receives and translates those instructions, then produces (or records) the sound exactly as it was played on the first device.

Note: Connecting your keyboard to another MIDI device requires a MIDI cable (not supplied). See "Making the MIDI Connections."

MAKING THE MIDI CONNECTIONS

To connect your keyboard to another MIDI-equipped device, you must use a MIDI cable (available at your local RadioShack store).

Cautions:

- Always turn off power to your keyboard and the other MIDI device before you connect or disconnect MIDI cables.
- As you make the cable connections, be sure to align the MIDI cable pins with the matching holes on your keyboard's **MIDI OUT** and **MIDI IN** terminals. If you have trouble plugging in the cable, do not force it! You might damage the plug or the instrument.

To send MIDI data from your keyboard, use a MIDI cable to connect the keyboard's **MIDI OUT** terminal to the other device's MIDI IN terminal.

To receive MIDI data on your keyboard, use a MIDI cable to connect the keyboard's **MIDI IN** terminal to the other device's MIDI OUT terminal.

Note: You do not need to make both connections if you are only either sending or receiving.

MIDI DATA

Your keyboard can send and receive several different types of MIDI data. The keyboard's tones, rhythms, and other types of MIDI data are sent automatically as you play.

Notes:

- The keyboard's prerecorded tunes cannot be sent as MIDI data.

- For detailed specifications of the MIDI function, see the “MIDI Implementation Chart” on Page 54.

Note On/Off — specifies which keys are pressed (Note On) or released (Note Off). Also includes how loud a note is played as a value from 0 to 127.

Notes:

- The pitch of a note depends on the tone that is being used, as shown in the “MIDI Implementation Chart” on Page 54.
- If the keyboard receives a “request” to play notes outside of its range (higher or lower), it automatically selects the same note in the nearest octave.

Program Change — specifies the tone.

Pitch Bend — supplies pitch bend information. The keyboard’s pitch changes as it receives a Pitch Bend message through the **MIDI IN** terminal, and the keyboard sends pitch bend information through the **MIDI OUT** terminal as you rotate **PITCH BEND**.

Control Change — adds effects such as vibrato and volume changes applied during keyboard play. The message includes a control number (the effect type) and a control value (the on/off and depth of the effect).

Here is the data that can be received with this keyboard and the corresponding control number.

Effect	Control Number
Bank Select	0, 32
Volume	7
Pan	10
Expression	11
Hold1 (Sustain)	64
Sostenuto	66
Soft Pedal	67
Effect Depth	91
RPN (Registered Parameter Number)	100/101
Data Entry	6/38

Use the Bank Select setting to select the keyboard’s tone groups to be changed by the Program Number message.

- Bank 0 — 0 to 127 (General MIDI tones)
- Bank 1 — 128 to 191 (synthesized tones)
- Bank 2 — 192 to 199 (drum sets)
- Bank 3 — 200 to 231(user tones)

Just before sending a Program Change message, send two Control Change messages with this data to the keyboard:

- Control Number = 0, Control Value = <bank number>
- Control Number = 32, Control Value = 0

Note: Channel 10 is reserved for drum sounds only, so it is not necessary to send bank select data when changing tones.

RPN is used when combining multiple control changes. RPN (100 and 101) selects the parameter to control, and Data Entry (6 and 38) sets the contents of the parameter. On the keyboard, RPN is used to set pitch bend range, transpose, and tune control from an external MIDI device.

All Sound Off forces all sound on the current channel to turn off, regardless of how the sound is being produced.

All Notes Off turns off all note data sent from an external device on the channel. The

notes being sustained by the pedal continue to sound until the next pedal off signal is received.

Reset All Controllers initializes pitch bend and all other control changes.

System Exclusive controls fine tone adjustments unique to a particular system. The system exclusives are unique to a particular system; however, there are "universal" system exclusives that are common among devices produced by individual manufacturers.

These are the system exclusive messages supported by this keyboard.

- **GM system On ([F0][7E][7F][09][01][F7])** — used to turn on the keyboard's GM (General MIDI) mode from an external MIDI device.

  Notes:

  - GM is a standard list of specifications that allows music created on one MIDI device to sound the same when played on another MIDI device. This keyboard's GM system incorporates most of these specifications.

  - This message takes more time to process than other messages; when you program GM system On in the sequencer, leave at least a 100 msec pause before the next message.

- **GM system Off ([F0][7E][7F][09][02][F7])** — used to turn off the keyboard's GM system.

- **Effect Change ([F0][44][0B][09][xx][F7])** — switches the keyboard's internal digital effects. xx determines the type of reverberation effect.

Effect Number	Digital Effect	Effect Number	Digital Effect
0	Reverb 1	6	Organ Speaker
1	Reverb 2	7	Enhancer
2	Reverb 3	8	Flanger
4	Chorus	9	Loudness
5	Phase Shifter	oFF	Off

Note: The contents of the System Exclusive message affect the entire keyboard. Other messages affect only the current MIDI channel.

CHANGING MIDI SETTINGS

The keyboard lets you change a number of MIDI parameters, including turning General MIDI mode on/off and selecting a MIDI channel.

1. Press **MIDI**.
2. Repeatedly press ▲ or ▼ to select the parameter you want to change.

   GM System on/off (Default: On): set to **on** when you want to have the keyboard receive GM data from another MIDI device. Turning GM system on automatically turns **CHORD** off, since GM system and MIDI In Chord Judge cannot be used at the same time.

   Set to **OFF** to turn GM system off. The tone, volume and other parameter settings of each channel are initialized. When playing received MIDI data, bass tones are lowered one octave and the piccolo tone is raised one octave.

Keybd Ch (Keyboard Basic Channel) (Default: 01): sets the channel for sending MIDI data to an external device.

Chord (MIDI In Chord Judge) (Default: Off): when set to on, the keyboard determines basic channel note data as auto accompaniment chords per the current chord fingering method. Turning GM system on automatically turns **Chord** off, since GM system and MIDI In Chord Judge cannot be used at the same time.

Local (Local Control) (Default: On): set to on to send data simultaneously to the keyboard's speakers and as MIDI data. Set to **OFF** to send data only as MIDI data (the speakers on the keyboard remain silent).

AcompOut (Accompaniment Out) (Default: Off): set to on to send auto accompaniment as MIDI data. Set to **OFF** to turn it off.

3. Within 5 seconds, use **+** or **–** to change the setting of the parameter.

DUMPING/IMPORTING DATA

The keyboard's internal data, including data recorded to memory and synthesizer data, can be sent and received in bulk as MIDI exclusive data through the MIDI terminals. Thus, you can use a computer or other MIDI device as an external storage device.

First make connections from the **MIDI IN** and **MIDI OUT** terminals to an external device using MIDI cables.

Note: Some software does not support MIDI exclusive data.

Dumping Data

1. Put the other device in its receive standby mode.

   See the owner's manual that comes with the receiving device for details.

2. Press **MIDI**.
3. Repeatedly press ▼, **BulkSnd?** appears.
4. Within 5 seconds, press **YES**. **Sending** appears. The keyboard automatically exits the data transfer mode after all the data is sent.

Importing Data

1. Press **MIDI**.
2. Repeatedly press ▼. **BulkRcv?** appears.
3. Within 5 seconds, press **YES** to prepare the keyboard to receive data.
4. Start the send operation on the connected device. See the owner's manual that comes with the connected device for details. The keyboard automatically exits the data transfer mode after all the data is received.

USING THE MIXER AND MIDI

As noted previously, your keyboard has a total of 32 channels – 16 internal and 16 external channels. You can use the external channels to play notes on the keyboard in accordance with the received MIDI data and select tones. Internal channel settings are irrelevant to the MIDI received data.

You can use the mixer function in combination with MIDI, allowing you to perform a variety of operations.

Internal Mode

When you use the internal mode, the settings affect only what you play on the keyboard and do not affect MIDI input data. You can use the internal mode to play along with external MIDI data by using separate settings for the keyboard notes. You can

change the tone, layer, split, and so forth without affecting the MIDI input.

External Mode

The mixer's setting affects the MIDI input data. This is convenient when you want to control MIDI input channel on/off setting. For example, you can turn off channel 3 of the MIDI input data and play on the keyboard for that part. Also, you can change the tone, volume, and so forth on the received MIDI data.

Refer to "Using the Mixer" on Page 20 for more information about using the mixer function.

Notes:

- The keyboard turns the channel on or off immediately after you select this option. Other changes become effective from the next MIDI input data.
- You cannot change the mixer settings on the keyboard because the mixer is in external mode, but you can change the tone of the current channel using **TONE**.

External Solo Mode

You can use this mode to check the contents of a specific channel of the received MIDI data. The on/off setting of the channels is different from the external mode. Press the corresponding **CHANNEL** button to turn on only that channel and turn off all other channels.

External Play Mode

This is the opposite of the external solo mode. Press a channel button to turn off that channel while keeping all other channels on. You can turn off one part of the received MIDI data so you can play along.

Tip: The difference between internal mode and external play mode is that external play mode allows you to turn off a part of the MIDI received data.

NOTES ABOUT THE MIDI IMPLEMENTATION CHART

The "MIDI Implementation Chart" on Page 54 illustrates the details of the keyboard's MIDI function. An **O** in the chart means that the keyboard has this feature; **X** means it does not have this feature. This section explains what the keyboard can do.

Basic Channel — MIDI uses up to 16 channels to exchange data. As in a TV broadcast, different channels send different data.

Mode — The chart shows that Mode 3 is OMNI OFF, POLY. This means the keyboard sends and receives polyphonic data on only one channel at a time.

Note Number — This number represents each key of the keyboard. The lowest number (0) is five octaves below middle C. Since the keyboard's lowest note is two octaves below middle C and the highest is three octaves above middle C, your keyboard can send a note number between 28 and 103. But, it can receive 0 through 127 note numbers, so those keys outside the keyboard's key range are interpreted as notes inside the key range.

Velocity — This number shows how fast the key was pressed, or how loud the note should sound. 1 is the lowest velocity, pianissimo; 127 is the loudest, fortissimo. 0 means the key is released.

9n — This means that the Note On message is 9 hexadecimal, and **n** is the channel number.

For example, if you select Channel 16 and press Key D in mezzo-piano, 9E (E is 15 in hexadecimal; note that Channel 1 is 0 in MIDI data) is first sent from MIDI OUT, then

3D (decimal 61) is sent as the key number, finally 21 (decimal 33) is sent as velocity.

Pitch Bender — The keyboard sends and receives pitch bending signals.

Control Change — This feature sends data on various controllers, each having its own number. For the details of each parameter, see “MIDI Data” on Page 39.

Program Change — This feature changes the preset sounds. Each sound number corresponds to a program number between 0 and 127.

System Exclusive — This feature sends special signals unique to the keyboard. For details, see “MIDI Data” on Page 39.

System Real Time — “Clock” is like a metronome to send the synchronizing signal.

System real time commands send three kinds of signals — *start* tells the keyboard to start playing from the beginning, *stop* tells all the synchronized instruments to stop playing, and *continue* is similar to start, but it signals the music to begin at whatever point it was last stopped.

All Notes Off — This feature is a kind of panic button: it stops the sounds currently playing. The keyboard only receives this message.

Active Sensing — This means the keyboard’s sound turns off in the event the connection cable to **MIDI IN** terminal is accidentally disconnected.

❒ *Troubleshooting*

Trouble	Possible Cause	Remedy
No sound, even if keys are pressed.	The keyboard has turned off automatically.	Turn on the keyboard.
	Volume is turned down.	Increase the volume.
	Headphones connected.	Disconnect headphones.
	Power supply problem.	Check the power supply. Are battery symbols (+/–) facing correctly? Are the batteries fresh? Is the AC or DC adapter connected properly?
	You are pressing too few accompaniment keys while **MODE** is set to **FINGERED**.	Set **MODE** to **FINGERED** or **CONCERT CHORD**.
		Press 3 or 4 keys to form a chord while **MODE** is set to **FINGERED**.
No sound when connected to an external amplifier.	Volume is turned down.	Repeatedly press **VOLUME ▲** to increase the volume.
	Defective connection cord.	Replace the connection cord.
No sound when receiving and playing MIDI data.	MIDI cables are not connected properly.	Check the connection.
The key or tuning does not match when playing along with another MIDI instrument.	The tuning or transpose parameter is set to a value other than **0** or **00**.	Set the tuning or transpose to **0** or **00**.

Trouble	Possible Cause	Remedy
Bass notes in General MIDI data are sent out one octave lower.	Tone map parameter is set to **N**.	Set the tone map parameter to **G** (see “Changing MIDI Settings” on Page 41).
Sounds sent to another MIDI device by the keyboard do not sound correct.	The other device’s MIDI THRU function is turned on.	Turn off the MIDI THRU function on the other device.

If your keyboard is not performing as it should, these suggestions might help. If you still cannot solve the problem, take the keyboard to your local RadioShack store for assistance.

CARE

Modifying or tampering with the keyboard’s internal components can cause a malfunction and might invalidate its warranty and void your FCC authorization to operate it. If your keyboard is not performing as it should, take it to your local RadioShack store for assistance.

❒ *Appendix*

NOTE TABLE

(1)	(2)	(3)	(4)
000	32	A	A0 - C8
001	32	A	A0 - C8
002	16	A	A0 - C8
003	16	A	A0 - C8
004	32	A	E1 - G7
005	32	A	E1 - G7
006	32	A	F2 - F6
007	32	A	C2 - C7
008	32	A	C4 - C8
009	16	A	C5 - C8
010	16	A	C4 - C6
011	32	A	F3 - F6
012	32	A	C3 - C6
013	32	A	F4 - C7
014	32	A	C4 - F5
015	16	A	C4 - C6
016	16	A	C2 - C7
017	16	A	C2 - C7
018	16	A	C2 - C7
019	32	A	A0 - C8
020	32	A	C2 - C7
021	16	A	F3 - F6
022	32	A	C4 - C6
023	16	A	F3 - F6
024	32	A	E2 - C6
025	32	A	E2 - C6
026	32	A	E2 - D6
027	32	A	E2 - D6
028	32	A	E2 - D6
029	32	A	E2 - D6
030	32	A	E2 - D6
031	32	A	E2 - D6
032	32	B	E1 - G3
033	32	B	E1 - G3
034	32	B	E1 - G3
035	32	B	E1 - G3
036	32	B	E1 - G3
037	32	B	E1 - G3
038	32	B	E1 - G3
039	32	B	E1 - G3
040	32	A	G3 - C7
041	32	A	C3 - C6
042	32	A	C2 - C5
043	32	B	E1 - G3
044	32	A	E1 - C7
045	32	A	E1 - C7
046	32	A	B0 - G7
047	32	A	C2 - A3
048	32	A	E1 - C7
049	32	A	E1 - C7
050	32	A	C2 - C7
051	16	A	C2 - C7
052	32	A	C3 - G5
053	32	A	C3 - G5
054	16	A	C3 - C6
055	16	A	C3 - C5
056	32	A	A♯3 - A♯6
057	32	A	A♯1 - D♯5
058	32	A	F1 - G3
059	32	A	A♯3 - A♯5
060	16	A	F2 - F5
061	32	A	C2 - C7
062	16	A	C2 - C7
063	16	A	C2 - C7
064	32	A	F♯3 - D♯6
065	32	A	C♯3 - G♯5
066	32	A	F♯2 - D♯5
067	32	A	C♯2 - G♯4
068	32	A	A♯3 - G6
069	32	A	E3 - A5
070	32	A	A♯1 - C5
071	32	A	D3 - G6
072	32	C	D5 - C8
073	32	A	C4 - C7
074	32	A	C4 - C7
075	32	A	C4 - C7
076	16	A	C4 - C7
077	32	A	G3 - C6
078	32	A	C4 - C7
079	32	A	C4 - C6

(1)	(2)	(3)	(4)
080	16	A	A0 - C8
081	16	A	A0 - C8
082	16	A	C2 - C7
083	16	A	C2 - C7
084	16	A	C2 - C7
085	16	A	C2 - C7
086	16	A	C2 - C7
087	16	A	A0 - C8
088	16	A	C2 - C7
089	32	A	C2 - C7

(1)	(2)	(3)	(4)
090	16	A	C2 - C7
091	16	A	C2 - C7
092	16	A	C2 - C7
093	16	A	C2 - C7
094	16	A	C2 - C7
095	16	A	C2 - C7
096	16	A	C2 - C7
097	16	A	C2 - C7
098	16	A	C2 - C7
099	16	A	C2 - C7

(1)	(2)	(3)	(4)
100	16	A	C2 - C7
101	16	A	C2 - C7
102	16	A	C2 - C7
103	16	A	C2 - C7
104	32	A	C3 - F5
105	32	A	C3 - C6
106	32	A	D3 - G5
107	32	A	G3 - C6
108	32	A	C3 - G5
109	16	A	C2 - F5

(1)	(2)	(3)	(4)
110	16	A	G3 - C7
111	32	A	C3 - C5
112	32	A	C5 - C6
113	32	A	C4 - C5
114	16	A	E3 - E5
*115	32	D	C4 - C5
*116	32	D	C4 - C5
*117	32	D	C4 - C5
*118	16	D	C4 - C5
*119	32	D	C4 - C5

(1)	(2)	(3)	(4)
*120	32	D	C4 - C5
121	32	A	C4 - C5
*122	16	D	C4 - C5
*123	32	D	C4 - C5
*124	32	D	C4 - C5
*125	32	D	C4 - C5
*126	16	D	C4 - C5
*127	32	D	C4 - C5

(1): Tone number
(2): Maximum polyphony
(3): Range type
(4): Recommended sound range for General MIDI

NOTES

- The meaning of each range type is described to the right.
- The pitch of tones marked with an asterisk do not change, no matter which keyboard key is pressed.
- Turning on SOUND RANGE SHIFT (Page E-59) causes range type B and C tones to shift by one octave.

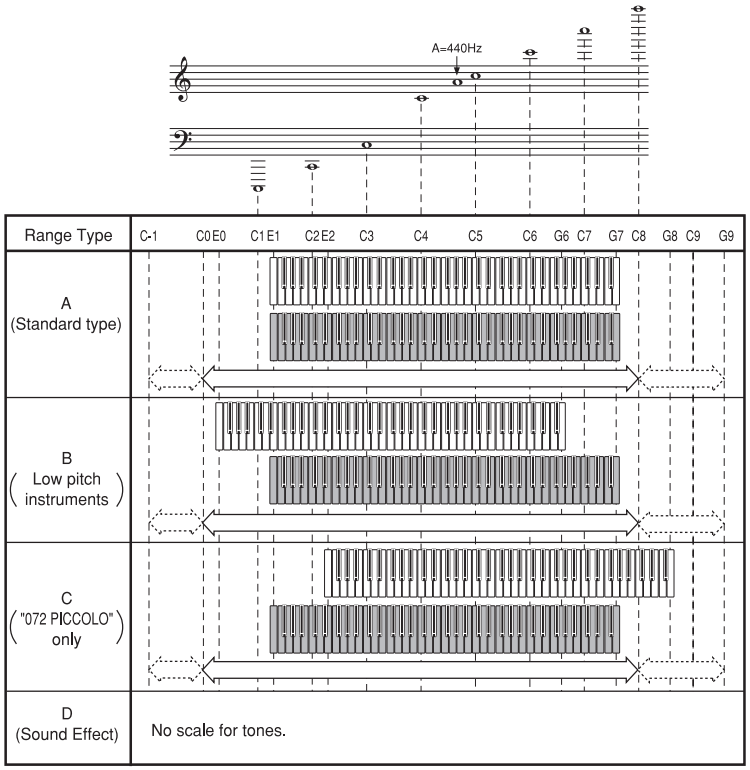
Legend:

* Tones without scale

*The following shows maximum polyphone for synthesized tones 128 through 159:

141 BASS SLIDE: 24 notes 1 DCO

Other tones: 12 notes 2 DCO



a .....Range of keyboard play (SOUND RANGE SHIFT tuned on)

b .....Range of keyboard play (SOUND RANGE SHIFT tuned off)

c .....Playable range (Transpose, when receiving MIDI data)

d .....Range in which same note is played in nearest octave as a result of transpose and MIDI data receive operation. (Transpose, when receiving MIDI data)

DRUM ASSIGNMENT LIST

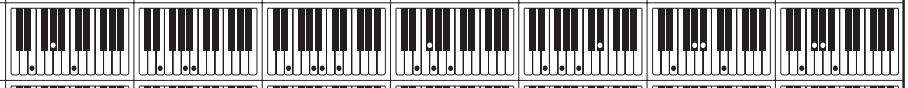
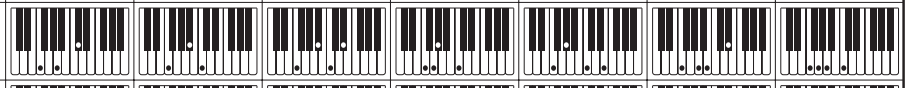
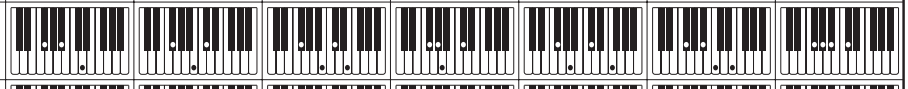
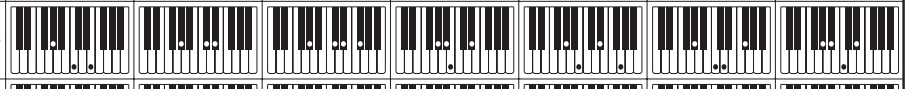
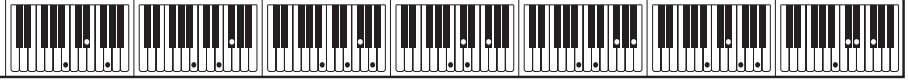
← indicates the same sound as Standard Set

Key/Note Number	STANDARD SET	ROOM SET	POWER SET	ELECTRONIC SET
D♭1 27	HIGH Q	←	←	←
E1 28	SLAP	←	←	←
F1 29	SCRATCH PUSH	←	←	←
F#1 30	SCRATCH PULL	←	←	←
G1 31	STICKS	←	←	←
A♭1 32	SQUARE CLICK	←	←	←
A1 33	METRONOME CLICK	←	←	←
B♭1 34	METRONOME BELL	←	←	←
B1 35	STANDARD KICK 2	POWER KICK 2	POWER KICK 2	POWER KICK 2
C2 36	STANDARD KICK 1	POWER KICK 1	POWER KICK 1	ELEC KICK
C#2 37	SIDE STICK	←	←	←
D2 38	STANDARD SNARE 1	ROOM SNARE 1	POWER SNARE 1	ELEC SNARE
E♭2 39	HAND CLAP	←	←	←
E2 40	STANDARD SNARE 2	ROOM SNARE 2	POWER SNARE 2	DANCE SNARE
F2 41	LOW TOM 2	ROOM LOW TOM 2	ROOM LOW TOM 2	ELEC LOW TOM 2
F#2 42	CLOSED HI-HAT	←	←	←
G2 43	LOW TOM 1	ROOM LOW TOM 1	ROOM LOW TOM 1	ELEC LOW TOM 1
A♭2 44	PEDAL HI-HAT	←	←	←
A2 45	MID TOM 2	ROOM MID TOM 2	ROOM MID TOM 2	ELEC MID TOM 2
B♭2 46	OPEN HI-HAT	←	←	←
B2 47	MID TOM 1	ROOM MID TOM 1	ROOM MID TOM 1	ELEC MID TOM 1
C3 48	HIGH TOM 2	ROOM HI TOM 2	ROOM HI TOM 2	ELEC HI TOM 2
C#3 49	CRASH CYMBAL 1	←	←	←
D3 50	HIGH TOM 1	ROOM HI TOM 1	ROOM HI TOM 1	ELEC HI TOM 1
E♭3 51	RIDE CYMBAL 1	←	←	←
E3 52	CHINESE CYMBAL	←	←	REVERSE CYMBAL
F3 53	RIDE BELL	←	←	←
F#3 54	TAMBOURINE	←	←	←
G3 55	SPLASH CYMBAL	←	←	←
A♭3 56	COWBELL	←	←	←
A3 57	CRASH CYMBAL 2	←	←	←
B♭3 58	VIBRA-SLAP	←	←	←
B3 59	RIDE CYMBAL 2	←	←	←
C4 60	HIGH BONGO	←	←	←
C#4 61	LOW BONGO	←	←	←
D4 62	MUTE HIGH CONGA	←	←	←
E♭4 63	OPEN HIGH CONGA	←	←	←
E4 64	LOW CONGA	←	←	←
F4 65	HIGH TIMBALE	←	←	←
F#4 66	LOW TIMBALE	←	←	←
G4 67	HIGH AGOGO	←	←	←
A♭4 68	LOW AGOGO	←	←	←
A4 69	CABASA	←	←	←
B♭4 70	MARACAS	←	←	←
B4 71	SHORT HI WHISTLE	←	←	←
C5 72	LONG LOW WHISTLE	←	←	←
C#5 73	SHORT GUIRO	←	←	←
D5 74	LONG GUIRO	←	←	←
E♭5 75	CLAVES	←	←	←
E5 76	HIGH WOOD BLOCK	←	←	←
F5 77	LOW WOOD BLOCK	←	←	←
F#5 78	MUTE CUICA	←	←	←
G5 79	OPEN CUICA	←	←	←
A♭5 80	MUTE TRIANGLE	←	←	←
A5 81	OPEN TRIANGLE	←	←	←
B♭5 82	SHAKER	←	←	←
B5 83	JINGLE BELL	←	←	←
C6 84	BELL TREE	←	←	←
C#6 85	CASTANETS	←	←	←
D6 86	MUTE SURDO	←	←	←
E♭6 87	OPEN SURDO	←	←	←
E6 88	-	-	-	-

Key/Note Number	SYNTH SET	JAZZ SET	BRUSH SET	ORCHESTRA SET
E♭1 27	←	←	←	CLOSED HI-HAT
E1 28	←	←	←	PEDAL HI-HAT
F1 29	←	←	←	OPEN HI-HAT
F#1 30	←	←	←	RIDE CYMBAL 1
G1 31	←	←	←	←
A♭1 32	←	←	←	←
A1 33	←	←	←	←
B♭1 34	←	←	←	←
B1 35	SYNTH KICK	JAZZ KICK 2	JAZZ KICK 2	JAZZ KICK 1
C2 36	SYNTH KICK	JAZZ KICK 1	JAZZ KICK 1	CONCERT BASS DRUM
C#2 37	SYNTH RIM SHOT	←	←	←
D2 38	SYNTH SNARE	JAZZ SNARE 1	BRUSH TAP	CONCERT SNARE
E♭2 39	←	←	BRUSH SLAP	CASTANETS
E2 40	SYNTH SNARE	JAZZ SNARE 2	BRUSH SWIRL	CONCERT SNARE
F2 41	SYNTH LOW TOM 2	←	←	TIMPANI F
F#2 42	SYNTH CHH 1	←	←	TIMPANI F#
G2 43	SYNTH LOW TOM 1	←	←	TIMPANI G
A♭2 44	SYNTH CHH 2	←	←	TIMPANI A♭
A2 45	SYNTH MID TOM 2	←	←	TIMPANI A
B♭2 46	SYNTH OHH	←	←	TIMPANI B♭
B2 47	SYNTH MID TOM 1	←	←	TIMPANI B
C3 48	SYNTH HI TOM 2	←	←	TIMPANI c
C#3 49	SYNTH CYMBAL	←	←	TIMPANI c#
D3 50	SYNTH HI TOM 1	←	←	TIMPANI d
E♭3 51	←	←	←	TIMPANI e♭
E3 52	←	←	←	TIMPANI e
F3 53	←	←	←	TIMPANI f
F#3 54	←	←	←	←
G3 55	←	←	←	←
A♭3 56	SYNTH COWBELL	←	←	←
A3 57	←	←	←	CONCERT CYMBAL 2
B♭3 58	←	←	←	←
B3 59	←	←	←	CONCERT CYMBAL 1
C4 60	←	←	←	←
C#4 61	←	←	←	←
D4 62	SYNTH HIGH CONGA	←	←	←
E♭4 63	SYNTH MID CONGA	←	←	←
E4 64	SYNTH LOW CONGA	←	←	←
F4 65	←	←	←	←
F#4 66	←	←	←	←
G4 67	←	←	←	←
A♭4 68	←	←	←	←
A4 69	←	←	←	←
B♭4 70	SYNTH MARACAS	←	←	←
B4 71	←	←	←	←
C5 72	←	←	←	←
C#5 73	←	←	←	←
D5 74	←	←	←	←
E♭5 75	SYNTH CLAVES	←	←	←
E5 76	←	←	←	←
F5 77	←	←	←	←
F#5 78	←	←	←	←
G5 79	←	←	←	←
A♭5 80	←	←	←	←
A5 81	←	←	←	←
B♭5 82	←	←	←	←
B5 83	←	←	←	←
C6 84	←	←	←	←
C#6 85	←	←	←	←
D6 86	←	←	←	←
E♭6 87	←	←	←	←
E6 88	-	-	-	APPLAUSE

FINGERED CHORD CHART

Root \ Chord Type	M	m	7	m7	dim7	M7	dim	m7-5
C								
C♯/(D♭)								
D								
(D♯)/E♭								
E								
F								
F♯/(G♭)								
G								
(G♯)/A♭								
A								
(A♯)/B♭								
B								

Root \ Chord Type	aug	sus4	7sus4	m add9	mM7	7-5	add9
C							
C♯/(D♭)							
D							
(D♯)/E♭							
E							
F							
F♯/(G♭)							
G							
(G♯)/A♭							
A							
(A♯)/B♭							
B							

FREE SESSION CHORD PROGRESSION CHART

No.	PATTERN NAME	
	8 BEAT	
000	8 BEAT 1	C | Am7 | Dm7 | G | Gm | A7 | Dm | E7 | Am | Am7 | Dm | Fm7 | C | Dm7 | G7 | C | C
001	8 BEAT 2	CM7 | Em7 | Am7 | Dm7 | G7 | C | Em7 | Am7 | Dm7 | G7 | Em7 | Fm7 | B♭7 | Em7 | Dm7 | G7 | Em7 | Fm7 | B♭7 | Em7 | A7 | Dm7 | G7
002	8 BEAT BALLAD 1	C | E♭7 | Am7 | D7 | Gm7 | C7 | F | Ab | Bb
003	8 BEAT BALLAD 2	C | 𝄎 | F | C | 𝄎 | Am | Dm7 | G7
004	8 BEAT BALLAD 3	CM7 | Em7 | FM7 | Em7 | Asus | Dm7 | Gsus | G | Am | Dm7 | G7
005	PIANO ROCK	C | Em | F | G7
006	POP ROCK 1	C | Am7 | C | Am7 | Dm7 | 𝄎 | Gsus | G7
007	POP ROCK 2	C | 𝄎 | 𝄎 | 𝄎 | F | 𝄎 | C | 𝄎 | G | 𝄎 | F | 𝄎 | C | 𝄎 | 𝄎 | 𝄎
008	70'S 8 BEAT	C | 𝄎 | G | 𝄎 | 𝄎 | G7 | C | C7 | F | 𝄎 | C | 𝄎 | 𝄎 | G7 | C | 𝄎 | F/G
009	60'S 8 BEAT	C | F | C | Em | Am | F | G | C | F | C | Em | Am | F | G | Em | 𝄎 | G/A | Am | G/A | Am | G/D | Dm | G/D | Dm | G/A | Am/G | G7
	16 BEAT	
010	16 BEAT 1	CM7 | FM7 | CM7 | 𝄎 | FM7 | Fm7 | Em7 | A7 | Dm7 | G7 | Em7 | Am7 | Dm7 | D7 | CM7 | 𝄎
011	16 BEAT 2	C | 𝄎 | CM7 | Dm7 | 𝄎 | FM7 | Em7 | Dm7 | F/G | C | Fm7 | F/G
012	16 BEAT SHUFFLE	C | 𝄎 | CM7 | Dm7 | Em/G | Dm7 | FM7 | Em7 | Dm7 | F/G | C | 𝄎 | F/G
013	16 BEAT BALLAD 1	CM7 | FM7 | Fm7 | Em7 | A7 | Dm7 | G7 | C
014	16 BEAT BALLAD 2	CM7 | Am | B♭ | F | Gm7 | C7 | Am7 | D7 | Gm7 | Em7♭5 | Am7 | D7 | Gm7 | C7 | F | A♭ | B♭ | C
015	16 BEAT BALLAD 3	CM7 | 𝄎 | Am7 | 𝄎 | Dm7 | 𝄎 | F/G | 𝄎
016	16 BEAT SOUL	CM7 | 𝄎 | 𝄎 | 𝄎 | Gm7 | 𝄎 | CM7 | 𝄎 | A♭M7 | 𝄎 | CM7 | 𝄎 | A♭M7 | 𝄎 | Gsus | G
017	BIG BAND ROCK	Cm | Gm | A♭ | Fm | Cm | Gm | A♭ | Fm | E♭ | A♭ | E♭ | A♭ | E♭ | A♭ | Dm7♭5 | G7
018	FUNKY POP 1	C7 | 𝄎 | 𝄎 | 𝄎 | F7 | 𝄎 | C7 | 𝄎 | G7 | F7 | C7 | 𝄎
019	FUNKY POP 2	C | Em7 | Am7 | Fm7 | C | Am | Dm7♭5 | Gsus | G7
	ROCK	
020	SHUFFLE ROCK	C | 𝄎 | 𝄎 | 𝄎 | F7 | 𝄎 | C | 𝄎 | G7 | 𝄎 | F7 | F7 | F7 | 𝄎 | C | 𝄎 | 𝄎 | G
021	8 BEAT ROCK	C | Em | FM7 | Dm7 | F/G | Am | Em | F | C | Am | Em | F | 𝄎 | F/G | G | G/E | Em7 | Dm7
022	70'S ROCK	C | B♭ | F | C
023	80'S ROCK	C | Em | F | Dm | F/G | C | Em | F | Dm | F/G | FM7 | Em7 | Dm7 | Em7 | FM7 | Em7 | Dm7 | Em7 | FM7 | F/G
024	HEAVY METAL	C | B♭ | F | C | B♭ | F | C | B♭ | F | C | B♭ | F | 𝄎 | 𝄎 | C | 𝄎 | F | 𝄎 | G | 𝄎
025	R & B	C7 | 𝄎 | 𝄎 | 𝄎 | F7 | 𝄎 | C7 | 𝄎 | G7 | F7 | C7 | 𝄎
026	ROCK	C | 𝄎 | B♭ | Am | G | 𝄎 | F | G | Am | 𝄎 | B♭ | F | Am | G | Csus | C
027	50'S R&R	C | 𝄎 | 𝄎 | G7 | F | 𝄎 | C | 𝄎 | G7 | F7 | C | 𝄎
028	NEW ORLNS R&R	C7 | 𝄎 | 𝄎 | 𝄎 | F7 | 𝄎 | C7 | 𝄎 | G7 | F7 | C7 | 𝄎
029	TWIST	C | 𝄎 | 𝄎 | 𝄎 | F | 𝄎 | C | 𝄎 | G | F | C | 𝄎
	POPS I	
030	MODERN R&B	C | E7 | Am | C7 | F | A7 | Dm | G | E7 | Am | E7 | Am | D7 | Dm | Dm | G7 | C | C
031	POP	C | F | C | 𝄎 | 𝄎 | F | G | 𝄎 | C | F | C | 𝄎 | B♭ | F | C | C
032	POP SHUFFLE	C | F | C | F | C | F | C | Am | G | F | C | F | C | G7
033	80'S POP	C | Am | G♭ | FM7 | Dm7 | F/G | C | Am | G♭ | FM7 | Dm7 | F/G | A♭ | B♭/A♭ | Gm7 | Csus7 | C7 | A♭ | B♭/A♭ | E♭ | F/G
034	SOUL POP	CM7 | 𝄎 | 𝄎 | 𝄎 | Gm7 | 𝄎 | CM7 | 𝄎 | A♭M7 | 𝄎 | CM7 | 𝄎 | A♭M7 | 𝄎 | Gsus | G
035	WORLD POP	CM7 | Bm7 | Am7 | Dsus7 | G
036	SLOW ROCK	C | G/B | Am | Em/G | F | F/G | G | C | G
037	6/8 BALLAD	C | Asus | A | Dm | G | F | Em | Am | Dm7 | G7
038	SOUL BALLAD	C | Dm7♭5 | E7 | Am7 | Gm7 | C | F6 | F♯dim | G/B | A7 | D7 | G7 | E7 | A7 | D7 | G7 | C | Bm7♭5 | E7 | Am7 | Gm7 | C | F6 | F♯dim | G/B | A7 | D7 | G7 | C | F7 | C | Gaug
039	ROCK WALTZ	C | 𝄎 | F | G | F | G | C | 𝄎 | 𝄎 | C7 | F | G | F/A | G/B | C | Gsus7

No.	PATTERN NAME	
	POPS II	
040	70'S DISCO	C | Em7 | Dm7 | G | Fm | Em | Dm7 | Gsus | G
041	80'S DISCO	C | D7 | FM7 | F/G
042	JUNGLE	Csus7 | 𝄎 | Esus7 | 𝄎 | Fsus4 | 𝄎 | Bsus7 | 𝄎 | Esus7 | 𝄎 | A♭sus7 | 𝄎 | Dsus7 | 𝄎 | Bsus7 | 𝄎
043	TECHNO	CM7 | 𝄎 | 𝄎 | 𝄎 | Em7 | 𝄎 | 𝄎 | 𝄎 | Gm7 | 𝄎 | 𝄎 | 𝄎
044	RAP	Cm | Gm | Cm | Gm | Fm | Gm | Cm | 𝄎
045	DANCE FLOOR	CM7 | 𝄎 | Am | 𝄎 | C | 𝄎 | Em | 𝄎 | F | 𝄎 | Gsus | G
046	HOUSE	Cm | 𝄎 | 𝄎 | 𝄎 | B♭ | 𝄎 | Cm | 𝄎 | A♭ | 𝄎 | B♭ | 𝄎
047	DANCE	C | B♭ | F | G | C | B♭ | F | G | Am | G | Am | F | C | B♭ | Csus | C
048	OLDIES POP	C | Am | F | G
049	OLDIES SHUFFLE	C | 𝄎 | 𝄎 | CM7 | Dm7 | G7 | Dm7 | G7 | C | 𝄎 | 𝄎 | CM7 | Dm7 | G7 | C | 𝄎 | F/G
	JAZZ	
050	BIG BAND 1	C | Am | Dm | G7 | Faug | Am | C7 | F | Fm6 | C | Am | Dm | G
051	BIG BAND 2	CM7 | Am7 | CM7 | Am7 | CM7 | Am7 | Dm7 | G7 | Dm7 | DmM7 | Dm7 | 𝄎 | F/G | G7 | CM7 | C6
052	SWING 1	CM7 | FM7 | Dm7 | G7 | Em7 | A7 | D7 | D♯7 | CM7 | 𝄎 | FM7 | Fm7 | Em7 | A7 | Dm7 | G7 | CM7 | Dm7 | G7
053	SWING 2	C | CM7 | Am7 | C | F | FM7 | Dm7 | F | G | G7 | Em7 | Am7 | Dm7 | G | C | 𝄎
054	SWING 3	C | E7 | A7 | 𝄎 | Dm7 | G7 | C | A7 | D7 | G7
055	SLOW SWING	C | Am7 | Dm7 | G7 | C | Am7 | Dm7 | G7 | C | Em7♭5 | F6 | Fm6 | Em7 | E♭7 | Dm7 | G7 | C | Am7 | Dm7 | G7 | C | Am7 | Dm7 | G7 | C | Em7♭5 | F6 | Fm6 | G/B | G7 | C
056	ORCH SWING	C | CM7 | Am7 | C | Dm7 | Em7 | FM7 | Dm7 | G7
057	JAZZ COMBO 1	C | C♯dim | Dm | D♯dim | Em | C7 | FM7 | B♭7 | C | A7 | Dm7 | G7 | C | A7 | Dm7 | G7
058	JAZZ WALTZ 1	C | 𝄎 | Bdim | E7 | Am7 | D7 | Gm7 | C7 | F | Fm | Em | A7 | D7 | G7 | C | G7
059	JAZZ WALTZ 2	C | Bm7♭5 | E7 | Am7 | A♭7 | Gm7 | C7 | FM7 | Fm7 | B♭7 | E♭m7 | E♭m7 | A♭7 | DM7 | Dm7♭5 | G7 | Em7 | E♭7 | Dm7 | G7
	EUROPEAN	
060	POLKA 1	C | 𝄎 | 𝄎 | G7 | 𝄎 | 𝄎 | 𝄎 | C | F | 𝄎 | C | 𝄎 | G7 | 𝄎 | C | C
061	POLKA 2	C | Dm | G7 | C | F | C | D7 | G7
062	MARCH 1	C | C7 | F | G7 | C | G7 | C | C7 | F | G7 | C
063	MARCH 2	C | 𝄎 | F | C | G7 | C | D7 | G7 | C | 𝄎 | F | C | F | F♯dim | G/E | Am | G/B | D7 | G7 | C
064	MARCH 3	C | 𝄎 | F | 𝄎 | C | 𝄎 | G | 𝄎 | C | C7 | F | Fm | C | G | C | G7
065	WALTZ 1	C | CM7 | Am7 | C | Dm7 | G7 | Faug | Am7 | Fm7♭5 | FM7 | G | C | G7
066	FRENCH WALTZ	C | Dm | Em | 𝄎 | F | 𝄎 | C | 𝄎 | F | Fm | C | 𝄎 | 𝄎 | G
067	BALL WALTZ	CM7 | Em7 | E♭m7 | Dm7 | G | CM7 | Am7 | Dm7 | G7
068	VIENNESE WALTZ	C | 𝄎 | 𝄎 | 𝄎 | 𝄎 | 𝄎 | Dm | 𝄎 | 𝄎 | 𝄎 | G7 | 𝄎 | Dm | G | C | 𝄎
069	TANGO	Cm | CmM7 | Cm7 | Am7♭5 | F♯m6 | 𝄎 | G7 | Cm | G7
	LATIN I	
070	BOSSA NOVA 1	CM7 | 𝄎 | FM7 | 𝄎 | Em7 | E♭m7 | Dm7 | G7
071	BOSSA NOVA 2	C | 𝄎 | Bm7♭5 | E7 | Am7 | 𝄎 | GM7 | C7 | FM7 | 𝄎 | B♭7 | 𝄎 | Em7 | A7 | Dm7 | G7
072	RHUMBA 1	C | 𝄎 | F | 𝄎 | C | 𝄎 | Dm7 | G7
073	RHUMBA 2	C | CM7 | Dm7 | G7 | Dm7 | G7 | CM7 | C6 | C | CM7 | Dm7 | G7 | Dm7 | Gsus7 | G7 | CM7 | C6
074	MAMBO	Cm | CmM7 | Cm7 | Am7♭5 | Fm7 | Fm6 | G7
075	SAMBA 1	CM7 | Cm7 | Bm7 | E7 | Am7 | D7 | GM7 | Am7 | D7
076	SAMBA 2	C | E♭ | Dm7 | G7 | C | A7 | Dm7 | G7 | C | C7 | F | Fm | Em7 | E♭m7 | Dm7 | G7 | C | A7 | Dm7 | G7
077	BOLERO	C | 𝄎 | Em7 | 𝄎 | Dm7 | G7 | C | 𝄎 | FM7 | 𝄎 | Fm7 | 𝄎 | Em7 | A7 | Dm7 | G7 | CM7 | 𝄎
078	CHA-CHA-CHA	C | 𝄎 | G | 𝄎 | C | 𝄎 | G | 𝄎 | C | F | B♭7 | Em | A7 | Dm7 | 𝄎 | G7 | 𝄎 | Gaug
079	MERENGUE	C | C6 | CM7 | C6 | C | C6 | Dm7 | G7 | Dm7 | G7 | Em7 | A7 | Dm7 | G7 | C

No.	PATTERN NAME	
	LATIN ▮ / VARIOUS ▮	
080	SALSA	C C6 Dm7 G7 Dm7 G7 CM7 C6 C C6 Dm7 G7 Dm7 G7 CM7 C6 Dm7 G7 Em7 A7 Dm7 G7 CM7 Am7 Dm7 G7 Em7 A7 Dm7 G7 C
081	PASODOBLE	C 𝄎 D♭ C
082	REGGAE 1	C F C G C F C G C
083	REGGAE 2	C Dm Em Dm C Dm Em Dm C Dm Em Dm C Dm Em F/G C Dm Em Dm C Dm Em F/G
084	SEQUINE	C 𝄎 𝄎 𝄎 G 𝄎 C 𝄎 F Fm C 𝄎 G 𝄎 C 𝄎
085	SKA	C Dm7 G7 C
086	EURO FOX	C Am Dm7 G7 Faug Am Gm7 C7 FM7 Fm6 C Am Dm7 G7
087	BALLROOM FOX	C C7 F C 𝄎 Am Am7 D7 G7
088	QUICKSTEP	C F C G7 C F C G C
089	FOX TROT	C C♯dim Dm G7 C C♯dim Dm7 G7 Gm7 C7 FM7 B♭7 G/A GM7 G7 C
	VARIOUS ▮	
090	FAST GOSPEL	C F/G C F/G C D7 Gsus7 G7 C C/E F Dm7b5 G/B D7 G7 C
091	SLOW GOSPEL	C C/E F6 C 𝄎 Gsus7 G7 C C/E F6 C G/B G7 C
092	CHICAGO BLUES	C7 𝄎 𝄎 𝄎 F7 𝄎 C7 𝄎 G7 F7 C7 𝄎
093	BLUEGRASS	C F C G C F C G C
094	COUNTRY	C G F C Em Dm G7 C F G C F C G7 C
095	50'S BALLAD	C 𝄎 𝄎 𝄎 F 𝄎 C 𝄎 G F C 𝄎
096	HAWAIIAN	C 𝄎 F 𝄎 F♯ G G7 C G7
097	BROADWAY	C C♯aug Dm7 G7 Dm7 G7 A♭aug C 𝄎 C7 F F C G7 C
098	ADANI	C 𝄎 F 𝄎 C 𝄎 G 𝄎 C 𝄎 F 𝄎 C G C 𝄎
099	BALADI	C 𝄎 G 𝄎 C 𝄎 D♭ G
	FOR PIANO ▮	
100	PIANO BALLAD 1	C E7 Am Am G F G Em7 A7 Dm7 G7 Csus C
101	PIANO BALLAD 2	C B♭ F C C B♭ F C E♭M7 F B♭ C E♭M7 F B♭ C
102	PIANO BALLAD 3	C Cm7 Dm7 G7 C Cm7 Dm7 Em7 Fm7 G7
103	EP BALLAD 1	C CM7 C7 C6 FM7 Em7 Dm7 G7 C CM7 C7 C6 FM7 Em7 Dm7 Em7 Fm7 Em7 Dm7 Em7 FM7 Em7 Dm7 Em7 FM7 Em7 Dm7 G7 C 𝄎
104	EP BALLAD 2	CM7 Am7 Dm7 D♭7 CM7 Am7 Dm7 G7 Em7 Am7 Dm7 Em7 FM7 G7 Em7 A7 Dm7 Em7 Fm7 G7
105	BLUES BALLAD	CM7 FM7 CM7 𝄎 FM7 𝄎 CM7 𝄎 Dm7 G7 CM7 𝄎
106	MELLOW JAZZ	CM7 FM7 Em7 A7 Dm7 G7 CM7 FM7 Em7 A7 Dm7 G7 Em7 A7 Dm7 D♭7 C D♭ C D♭
107	JAZZ COMBO 2	C7 F7 C7 𝄎 F7 F♯dim C7 𝄎 Dm7 G7 C7 𝄎
108	RAGTIME	C C7 F F♯dim Dm7 G7 C C C7 F F♯dim D7 G C C7 F F♯dim Dm7 G7 C C7 F Fm Dm7 G7 C
109	BOOGIE-WOOGIE	C 𝄎 𝄎 𝄎 F 𝄎 C 𝄎 Dm G C 𝄎
	FOR PIANO ▮	
110	ARPEGGIO 1	C Caug C6 C7 F Faug F6 Faug Dm7 G7 Em7 A7 Dm7 D♭7 CM7 𝄎
111	ARPEGGIO 2	C FM7 Em7 FM7 C FM7 Em7 A7 Dm7 G7 Em7 A7 Dm7 D♭7 CM7 𝄎
112	ARPEGGIO 3	C F C G C F Dm7 G7 C
113	PIANO BALLAD 4	CM7 E F Dm7 G7 FM7 Fm7 Em7 A7 Dm7 G7 CM7 𝄎
114	6/8 MARCH	C 𝄎 F 𝄎 C 𝄎 G 𝄎 C 𝄎 F 𝄎 C G C 𝄎
115	MARCH 4	C F G C
116	2 BEAT	C F7 C C7 F7 Fm7 Em7 A7 Dm7 𝄎 D♭7 𝄎 C 𝄎 𝄎 𝄎
117	WALTZ 2	CM7 Em7 Am CM7 FM7 Fm7 Dm7 D♭7
118	WALTZ 3	CM7 𝄎 G7 𝄎 Am7 𝄎 E7 𝄎 FM7 𝄎 Fm7 𝄎 Em7 𝄎 Dm7 G7
119	WALTZ 4	CM7 𝄎 FM7 𝄎 Dm7 G7 Em7 Am7 Dm7 𝄎 D♭ 𝄎 CM7 𝄎 𝄎 G7

CHORD CONVERSION TABLE

No.	Names	Element Names		Part Names		Description
		Intro, Ending	Normal, Variation, Normal / Fill-in, Variation / Fill-in	Bass	Chord 1 Chord 2 Chord 3	
00	Basic Bass	×	○	○	×	Normally used for the bass part.
01	7th Bass	×	○	○	×	Used for a bass part recorded by a 7th chord.
02	Basic Chord	×	○	×	○	Normally used for the chord part.
03	Basic Chord2	×	○	×	○	A variation of Number 02 with different conversion when Gm7 / C is specified during accompaniment.
04	Variation Chord1	×	○	×	○	Specifying a 7th chord during play transforms the 5th note of the scale to the 7th note of the scale. In the case of C7, for example, G becomes B♭.
05	Variation Chord2	×	○	×	○	Variation of number 04 (Variation Chord 1)
06	7th Chord	×	○	×	○	Used for the chord part when a 7th chord is recorded.
07	Minor Chord	×	○	×	○	Used for the chord part when a minor chord is recorded.
08	Major Phrase	×	○	×	○	Used for the chord part when a phrase is recorded in a major scale.
09	Minor Bass Phrase	×	○	○	×	Used for the bass part when a phrase is recorded in a minor scale.
10	Penta Phrase	×	○	×	○	Used for the chord part when a phrase is recorded in a penta scale (CDEGA).
11	Natural Minor	○	×	○	○	Transforms to natural minor when a minor chord is played.
12	Melodic Minor	○	×	○	○	Transforms to melodic minor (ascending) when a minor chord is played.
13	Harmonic Minor	○	×	○	○	Transforms to harmonic minor when a minor chord is played.
14	No Change	○	×	○	○	Original chord as recorded in response to chord that is played, without transformation to minor or major.
15	Melodic Minor 2	○	×	○	○	Variation of number 12 (Melodic Minor). Playing a major chord causes recorded B♮ notes to be transformed to B, while playing a minor chord plays B♭ as it is.
16	Dorian Scale	○	×	○	○	Play of a minor chord is transformed to the Dorian scale. The Dorian scale lowers the major scale E and B one semitone.
17	Minor ➛ Major	○	×	○	○	Used for intro and ending recorded with minor chords.
18	Tension chord	×	○	×	○	Used for the tension chord part used in jazz, bossa nova, etc.

❒ *MIDI Implementation Chart*

FUNCTION		TRANSMITTED	RECOGNIZED	REMARKS
Basic	Default	1–16*1	1–16	*1 Held in memory
Channel	Changed	1–16	1–16	with power supplied
	Default	Mode 3	Mode 3	
Mode	Messages	X	X	
	Altered	**********	**********	
Note		28–103	0–127	*2See “Note Table” on
Number:	True voice	**********	12–108*2	Page 45
Velocity	Note ON	O 9nH v=1–127	O 9nH v=1–127	XX=no relation
	Note OFF	X 9nH v=0	X 9nH v=0, 8nH v=XX	
After	Keys	X	X	
Touch	Channels	X	O*3	
Pitch Bender		O	O	
	0, 32	O	O	Bank Select
	1	O	O*3	Modulation
	6, 38	O*4	O*4	Data entry
	7	O	O	Volume
	10	O	O	Pan
	11	O	O	Expression
Control Change	64	O*5	O	Hold 1
	66	O*5	O	Sostenuto
	67	O*5	O	Soft pedal
	91	O	O	Effect Send
	100, 101	O*4	O*4	RPN LSB, MSB
	120	X	O	All sound off
	121	X	O	Reset all controller
Program		O 0–127	O 0–127	
Change:	True #	**********	**********	
System	Exclusive	O*6	O*6	
System	: Song Pos	X	X	
Common	: Song Sel	X	X	
	: Tune	X	X	
System	: Clock	O	X	
Real Time	: Commands	O	X	
Aux	: Local ON/OFF	X	X	
	: All notes OFF	X	O	
Messages	: Active Sense	X	O	
	: Reset	X	X	

Remarks

*3 Modulation and after touch for each channel are the same effect.

*4 Pitch bend sense, fine tune, coarse tune send/receive, and RPN Null receive

*5 In accordance with assignable jack setting

*6 GM on/off GM ON:[F0][7E][7F][09][01][F7]

GM OFF: [F0][7E][7F][09][02][F7]

Effect change [F0][44][0B][09][XX][F7] XX=00: Reverb 1, 01: Reverb 2, 02: Reverb 3, 03: Cho-

rus, 04: Tremolo, 05: Phaser, 06: Organ, 07: Enhancer, 08: Flanger, 09: Loudness, 0F: OFF
Bulk dump [F0] [44][0F][05] [$0L_0$][$0H_0$]...[$0L_{127}$][$0H_{127}$] [$0L_{CS}$][$0H_{CS}$] [F7] × 814 Block

ID Number Data (128 × 2 = 256 Bytes) Checksum (1 × 2 = 2 bytes)

Mode 1: OMNI ON, POLY Mode 3: OMNI OFF, POLY O: Yes
Mode 2: OMNI ON, MONO Mode 4: OMNI OFF, MONO X: No

❒ *Specifications*

Number of Keys 76
Polyphonic Sound ..... 32-note (Max.)
Preset Tones ..... 232 (128 General MIDI, 64 synthesized, 32 user, 8 drum sets) with Layer and Split
Rhythm Instrument Tones 61
Digital Effects ..... 10 (3 reverb types, chorus, tremolo, phase shifter, organ speaker, enhancer, flanger, loudness)
Demo Tunes 2

Auto Accompaniment

Rhythm Patterns 130
Tempo ..... Variable (226 steps, 30 to 255)
Chords ..... 3 fingering methods (Concert Chord, Fingered, Full Range)
Rhythm Controller ..... Start/Stop, Intro, Normal/Fill-In, Variation/Fill-In, Synchro/Ending
Accompaniment Volume ..... 0 to 127 (128 steps)
One-Touch Preset ..... Recalls tone, tempo, and auto harmonize settings best suited for the selected rhythm
Free Session ..... 120 patterns (auto accompaniment with selected chord progression)
Auto Harmonize ..... Automatic addition of harmonizing notes on melody play, in accordance with the specified auto accompaniment chords

Registration Memory

Number of Setups ..... 20 (5 locations × 4 banks)
Memory Contents ..... Tone, rhythm, tempo, split setting, split point, layer setting, auto harmonize, mixer settings, keyboard channel on/off, digital effect settings, touch response setting, **ASSIGNABLE JACK** setting, transpose setting, tuning setting, pitch bend range, accompaniment mode setting, sound range on/off

Song Sequencer

Songs 2
Recording Tracks ..... 6 (2 through 6 are melody tracks)
Recording Methods ..... Real-time
Memory Capacity ..... Approximately 4,900 notes (total for two songs)
Punch In ..... Supported

Pattern Sequencer

Number of Patterns ..... 10 (Rhythm numbers 120 to 129)
Memory Capacity ..... Approximately 5,800 notes
Elements ..... Intro, Normal, Variation, Normal Fill-in, Variation Fill-in, Ending
Parts ..... Chord 1, 2, 3, Bass, Rhythm
Recording Method ..... Real-time

Custom Tone Synthesizer Function

Parameters ..... PCM set, amp envelope set, attack rate, release rate, pitch envelope set, pitch, level, touch sense, pan, filter sensitivity, filter level, transpose

Mixer Function

Channels 16
Parameters ..... Program change number, volume, expression, pan, coarse tuning, fine tuning, effect send
Modes..... Internal, External, External/Solo, External/Play
MIDI ..... 16 multi-timbre receive, GM Level 1 standard
Transpose ..... –12 semitones to +12 semitones
Tuning ..... Adjustable A4 = 440 Hz ±50 cents
Pitch Bend Range ..... 12 semitones up and down
Modulation ..... Equipped
Built-In Speakers ..... 12 cm × 2, 5 cm × 2

Terminals

MIDI Terminals ..... IN, OUT
Assignable Terminal ..... 1/4-Inch Phone Jack (sustain, sostenuto, soft, rhythm start/stop)
Power Supply ..... 12V DC Jack
Headphones/Output Terminal ..... Stereo Standard Jack
Output Impedance: 200 Ohms
Output Voltage: 140 mV at 8 Ohm Load (RMS) MAX

Power Sources

DC ..... 6 D Batteries
AC ..... 12V with optional AC Adapter
Power Consumption ..... 18 W
Dimensions (HWD) ..... $6^{9}/_{16} \times 48^{1}/_{4} \times 16^{11}/_{16}$ in (16.7 × 122.5 × 42.3 cm)
Weight (Without Batteries) ..... 20 lb 8 oz (9.3 kg)
Included Accessories ..... Sheet Music Stand

Specifications are typical; individual units might vary. Specifications are subject to change and improvement without notice.

Limited One-Year Warranty

This product is warranted by RadioShack against manufacturing defects in material and workmanship under normal use for one (1) year from the date of purchase from RadioShack company-owned stores and authorized RadioShack franchisees and dealers. EXCEPT AS PROVIDED HEREIN, RadioShack MAKES NO EXPRESS WARRANTIES AND ANY IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE DURATION OF THE WRITTEN LIMITED WARRANTIES CONTAINED HEREIN. EXCEPT AS PROVIDED HEREIN, RadioShack SHALL HAVE NO LIABILITY OR RESPONSIBILITY TO CUSTOMER OR ANY OTHER PERSON OR ENTITY WITH RESPECT TO ANY LIABILITY, LOSS OR DAMAGE CAUSED DIRECTLY OR INDIRECTLY BY USE OR PERFORMANCE OF THE PRODUCT OR ARISING OUT OF ANY BREACH OF THIS WARRANTY, INCLUDING, BUT NOT LIMITED TO, ANY DAMAGES RESULTING FROM INCONVENIENCE, LOSS OF TIME, DATA, PROPERTY, REVENUE, OR PROFIT OR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, EVEN IF RadioShack HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

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In the event of a product defect during the warranty period, take the product and the RadioShack sales receipt as proof of purchase date to any RadioShack store. RadioShack will, at its option, unless otherwise provided by law: (a) correct the defect by product repair without charge for parts and labor; (b) replace the product with one of the same or similar design; or (c) refund the purchase price. All replaced parts and products, and products on which a refund is made, become the property of RadioShack. New or reconditioned parts and products may be used in the performance of warranty service. Repaired or replaced parts and products are warranted for the remainder of the original warranty period. You will be charged for repair or replacement of the product made after the expiration of the warranty period.

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